

What's RIGHT—What's WRONG—With 1961 CARS!

# MOTOR TREND

JANUARY 1961 35¢

## ROAD TESTS FORD-CHEVY

PLUS CUTAWAY DRAWINGS

*How to Select Engines,  
Transmissions and  
Axle Ratios*

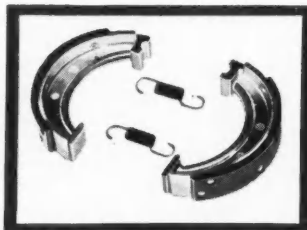


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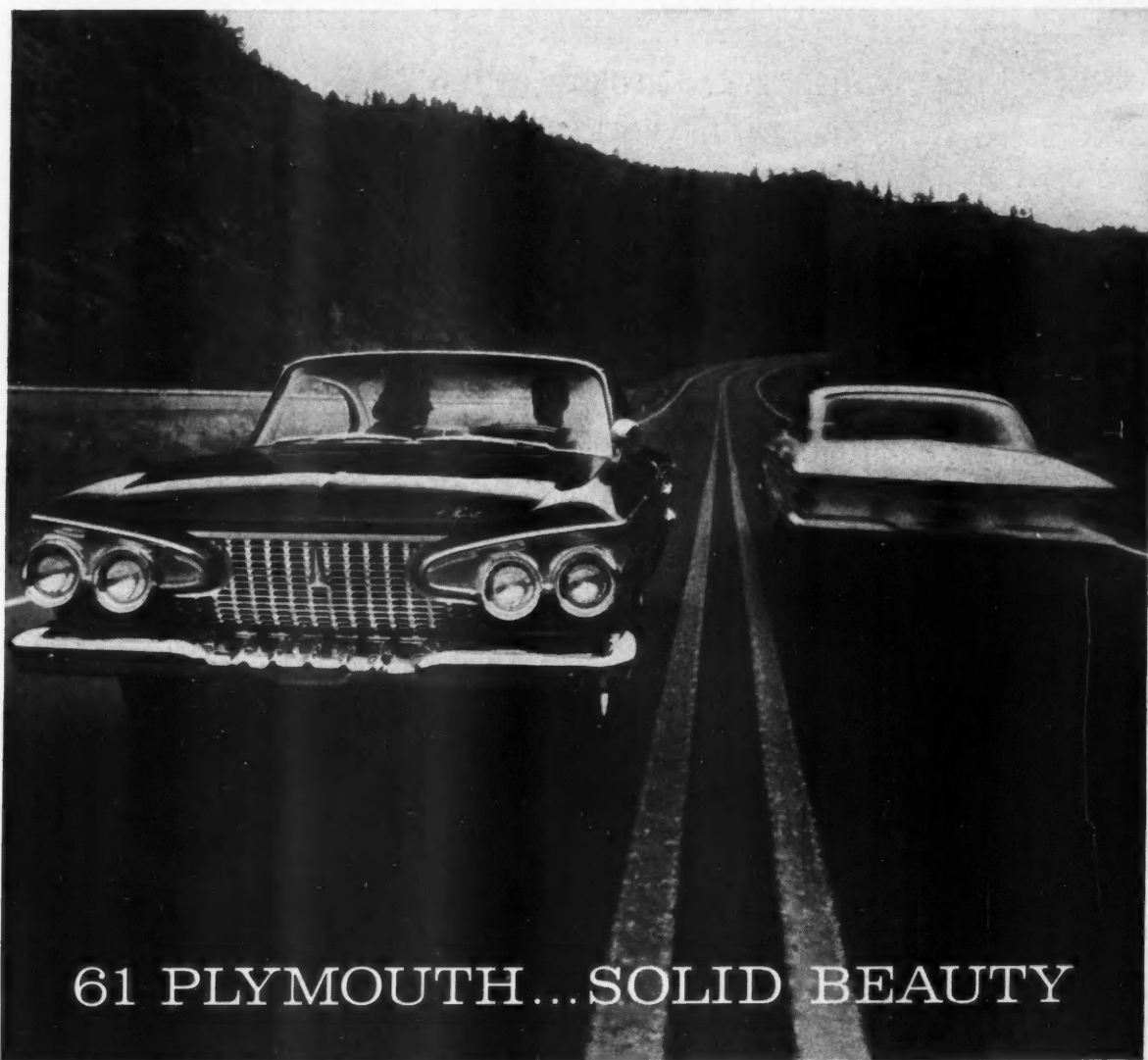
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# MOTOR TREND

JANUARY 1961

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This month's cover features the two cars that remain the stars of the U.S. auto world, the standard-size Ford and Chevrolet. They are the subjects of MT's first "Full Range Road Tests," beginning on page 18 of this issue.

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\*With optional 4-barrel carburetor and automatic transmission.  
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**MEMO  
 FROM THE EDITOR**

**DON WERNER**

**T**HIS JANUARY ISSUE OF **MOTOR TREND** is the first of the new calendar year and, quite appropriately, it is also the issue which begins the series of standard MT road tests of the 1961 models by Detroit. This series of tests will continue for the next seven issues.

The test schedule is the most ambitious ever attempted in MT. It will cover 71 different makes or sub-makes or types of cars. Not included in this total, of course, are the important imports which also will be extensively tested. By mid-summer we expect the editors of MT will have test-driven something like 200 individual vehicles.

I'm often asked about MT's testing techniques and how the editors evaluate the cars. It is a rather complex process, but a few of the more important procedures can be described in this limited space. And this probably is a good occasion to explain them.

The key to MT road testing is experienced testers. It is absolutely essential, I feel, that an editor be familiar not only with the test car, but the preceding models of that particular make, as well as the past and present models of all other domestic and imported makes. In other words, he has to know virtually the entire scope of auto design.

Yet such a background is necessary in order to form comparisons, to recognize what is old, what is new and what is borrowed. Above all he must be able to identify the elusive characteristics of performance and design and determine their origin. To put it another way, the tester must have reference points before he can arrive at any conclusions.

It may sound as if our editors are automobile encyclopedists. Individually they are not — but collectively, as a complete editorial staff, they are as well informed as any group with one important difference. In addition to their background on cars, they need to know what people want to know about cars.

There's another item that relates significantly to the competence with which the MT staff reports on cars. Although it is in this issue that the first standard test reports appear, the cars involved were familiar subjects. All were driven and studied as long ago as last July, months before the public announcement. So when the final testing of the Ford or Chevrolet began, for instance, the basic facts about them had been thoroughly absorbed.

A fundamental premise of MT testing is that it is largely non-scientific. It could be no other way. Obviously the driving of perhaps three or four cars of a given make is insufficient evidence upon which to draw valid general conclusions that could be safely applied to hundreds of thousands of units manufactured — if statistics or mechanized devices were relied upon exclusively. That is not the scientific method. But an alert and experienced editor-tester, one who will quickly recognize abnormalities and discard them before he makes his final judgment, is dependable.

Yet as a safeguard against individual error, there is a method of double-checking that is a vital part of MT road testing. Each car or utility vehicle is tested by at least three and often by four or five testers. Each editor then reports separately and independently. These reports are assembled, the differences reconciled, and the result consolidated into one report that is reviewed and OK'd for publication in MT. Not only does this reduce the possibility of error and bias to a minimum, but it also brings into the test report the broad viewpoint, rather than a narrow, limited one.

The test reports in MT, however, are not rigid and inflexible in form or content. For 1961, for instance, we are expanding upon a set of factors that in the past have only been given passing and irregular attention. That is the matter of power train options.

The editors of **MOTOR TREND** feel very strongly that for too long too many buyers have selected cars for color, style, trim and superficial accessories. Too often after purchase the car buyer has been disappointed because the car he selected in the showroom, without thinking about what he was getting in engine, transmission and axle ratios, failed to perform the way he expected it would. A lot of cars look alike — but there can be a difference. A big one.

/MT





## meet '61's new-size sizzler!

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THE BEST OF BOTH WORLDS 



### FIRST IMPRESSIONS OF '61'S

Having seen the following '61 automobiles, I would like to submit my impressions:

**Ford** — Styling is greatly improved over the current model. I also like the rear-end treatment with its round tail-lights. The interior is typically Ford — not overdone, just enough trim to make it appealing. I do not, however, like the recessed rear floor, so common with this and other makes this year — I find it hard to enter and leave the rear compartment.

**Falcon** — Ford has a good thing in this little jewel. Styling is excellent, both inside and out. I would like to see a hardtop added to the line. I don't like the new full-length body molding available as an option. When used with the stainless steel window trim, the car takes on an overdone appearance. Ride could stand improvement also.

**Plymouth** — The fins may be gone, but the car is still not as nice looking as its predecessors. It has a bulky, massive appearance like the '59 model. Interior decor, however, is in good taste.

**Pontiac** — This new Pontiac is about the nicest looking ever produced. I note a similarity in its lines to those of a Dual-Ghia of the late '50s. It is sharp.

**Corvair** — A fine example of basic automobile styling. Those new trucks should give the VW truck line a good race in sales.

**Buick Special** — I dislike the appearance of a full-size Buick in the Special. I think it should have a design all its own. The same is true of the Olds F-85. Alan Bell      Munising, Mich.

Each year the auto industry becomes less and less original in its designs. It seems that styling is wilder, and the cars are looking worse.

At first glance, many '61s look like their '60 rivals. Comet has an Oldsmobile grille, Lancer has a Pontiac grille, and the front end of the Ford resembles Cadillac. The Dodge grille is somewhat similar to the 1960 Chevrolet's. Do De-

troit manufacturers sell their old body dies to rival firms?

Plymouth seems to have one of the best-looking 1961 sedans from the sides and rear, but the huge headlight shades cutting into the grille detract from the front.

The B-O-P small cars are sensible in size, and their styling is not wild to an extreme. They are not really "compact," but they are small enough to make driving a pleasure. Although the basic body and door panels are the same in all three cars, their appearances are all different, yet good looking.

It seems that if Detroit would make styling more pleasing to the eye and more functionally perfect, rather than competing to adopt the newest and wildest ideas, the American automobile would look far better than it does now. Fred Klaiss      Adrian, Mich.

Well the '61 cars are out now — and as usual, we are offered nothing really new, except for rearranged styling gimmicks. The Dodge looks like a Ford, the Ford looks like a Cadillac, etc.

While I'm waiting for something truly new and improved, I will keep driving my 1929 Model A.

Warren L. Jacob      Boca Raton, Fla.

Ford's styling is very, very poor. However, the introduction of the 390-cubic-inch engine will probably make up for the styling in some people's eyes. The Comet has also used poor styling taste. The grille is just terrible, but here, too, a performance engine should help sales. Falcon this year has a new grille, which doesn't go with the conservative lines of the car.

The Plymouth has shown good taste with the styling of the unusual grille and flat, down-curved rear deck. As far as the Dart and senior Dodge go, the styling of both is good but, as in 1960, the Dodge really shows up the Dart in this department — even more so than last year. The introduction of a regular-grade-fuel engine should cause many people to take a second look at the Dodge.

A Motor Trend Fan

### SHAVERS AND DISHPANS

Why must Falcons look like Remington shavers, Valiants look like Larks, Lancers look like Valiants, Ambassadors look like germs, Chevrolets look like Oldsmobiles, Plymouths look like animals, Fords look like Cadillacs, Pontiacs look like boats, Buicks look like Fords, Chryslers look like Hawks, De Sotos look like Lincolns, Imperials look like insects, Thunderbirds look like Polyethylene dishpans, Cadillacs look like hearses, and Lincolns look like H... I in the 1961 model year?

It beats me — but this is what Detroit calls progress?

A Frustrated Motorist

### "CAR OF THE YEAR"

Judging from past performances, it does not require much gazing into the crystal ball to spot the car that will be selected by the MOTOR TREND staff as "Car of the Year" for 1961.

In looking about for the car with the most freakish and impractical engineering, known to MOTOR TREND as "advanced engineering," the Pontiac Tempest is practically "in the bag."

Projecting this same philosophy a year hence into 1962, we come up with the front-wheel-drive Ford.

R. W. Martin      North Miami, Fla.

In your November issue Bob Duncan predicts that you will choose the Pontiac Tempest as "Car of the Year." I too have this feeling.

The car that really deserves the honor is the Rambler. After all, if Rambler sales hadn't scared the Big Three into the compact field, there wouldn't be any Falcon, Corvair, Comet, Valiant, Tempest, etc.

Why don't you show a little more respect for the revolutionary Rambler and at least consider it?

Larry J. Kessinger      Chambersburg, Pa.

### ROCK 'N ROLL

In your October issue, in which you covered several types of independent rear suspensions, I was struck by your slight preference for a low pivot mount à la Mercedes, with its attendant low roll center.

A number of years ago I pondered the problem of riding comfort in a car. On fast, twisting circuits, it seems to resolve into two things — namely, the softness of the ride and the tendency to roll or lean. Forgetting for a moment the softness of the ride, it seems to me, from sampling our modern products, that the roll resistance has not improved over the years but rather, has become worse since the days of the Model A.

It also seems to me that so long as the roll center at either end of the car is lower than the center of gravity of the car, the vehicle will always tend to lean regardless of how stiff the anti-roll equipment is. The greater this distance between the roll center and the center of gravity becomes, the greater will be the tendency to lean and roll.

It would, therefore, seem that the low pivot point mount with its low roll center would not be so good in *passenger* cars, where lean certainly is most undesirable. Would it not be better to raise the roll center to a point above the center of gravity of the sprung car, whereupon it would become a "bank" center, and the car would swing like a hammock on corners?

I realize that a high roll center at the rear of a car promotes oversteer, but would not an equally high roll

*continued on page 10*



## **PONTIAC ANNOUNCES THE TROPHY V-8 ENGINE**

**Made lighter, mounted lower! New free-breathing fuel induction system! Eleven power teams to choose from! New gear boxes include 3-speed Hydra-Matic and beefy 4-speed stick shift!**

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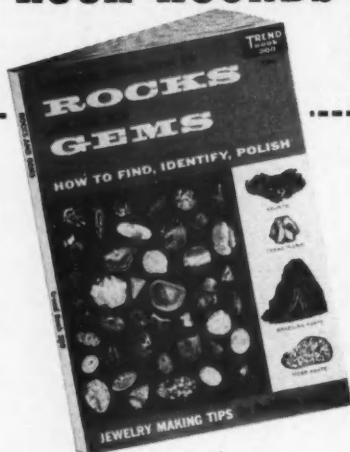
Two new gear boxes\* (a 3-speed Hydra-Matic and a 4-speed floor-mounted stick) give you 11 power teams to choose from. Horsepowers range from 215 to 348—all with the big 389-inch displacement which turns out maximum thrust at half throttle. Get behind one of these new Trophy V-8's soon at your Pontiac dealer's. There's only one like it.

PONTIAC MOTOR DIVISION OF GENERAL MOTORS CORPORATION

\*Extra cost options

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## A Very Special Notice To ROCK HOUNDS



Wondering where to locate new additions to your collection? Wishing for complete and dependable information on geographical locations of those hard to find rocks and gems? Friend, look no further; here's a welcome solution to all your problems. It's the new **ROCKS & GEMS BOOK**. And it's just what you've asked for in your letters and cards.

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## Letters

continued

center at the front of the car, plus 50-50 weight distribution promote neutral steering with oversteer under power (or understeer with front-wheel drive — power on)?

You might be interested in knowing that in my quest for a car with both good ride and low lean, I bought a Citroen ID-19.

John S. Spence      Whitby, Ont., Canada

### FLOOR HUMPS

Dean Parker's article on independent rear suspension (Oct. MT) raised the question: "How important is the floor hump as a sales factor?"

I own a Corvair, and the flat floor design had nothing to do with my decision to buy. The T-Bird certainly has been popular, and it carries quite a hump.

I can't remember when I have had to carry three people in the front or back seat. In fact, I would vote for the more comfortable bucket seats.

Granted, all family needs are not the same as mine. The station wagons of recent design offer attractive, roomy and comfortable transportation to those families who need the extra room. The wagons should be easier to design independent rear suspension and transaxles for — the deep dish of the trunk is not there to design around.

So — let's have four-place bucket-seated sedans, with the driveshaft tunnel as armrests and instrument mounting, and station wagons with flat floor design and more room for those who want and need it.

C. William Northcutt      Normal, Ill.

### BACKWARD STEP

I have followed with great interest the endeavor of certain automobile manufacturers to reduce the transmission hump, eliminate the transmission hump, or flatten the floor.

The part I don't seem to understand is after they have eliminated or reduced the hump so the middle passenger can sit comfortably, why, oh why, do they put the gearshift lever on the floor again? It seems to me this is a step backwards.

SFC Darrel E. Johnson      APO 35, N.Y.

### NOTHING NEW

In the article on the Pontiac Tempest in the October issue you state: "The Tempest will be the first American car to achieve the idyllic front engine-rear transmission arrangement..."

During the period prior to 1920, Packard, Stutz, E.M.F. and others used this arrangement in production models. Also at least one car, the Simplex, used a transmission, differential and jackshaft

amidships with final drive via roller chain, thus having only a dead axle and wheel assembly as unsprung weight. This car had remarkable road-holding ability.

This all goes to prove that there is "nothing new under the sun."

H. W. Stuart      Eugene, Ore.

### WHY FRONT-WHEEL DRIVE?

For several months now I have been reading articles of speculation on trans-axles and front-wheel drive.

A layout involving a front-mounted engine and a rear-mounted transaxle sounds like a pretty sensible setup to me. It reduces the big floor hump and puts more weight on the rear wheels for better traction and better weight distribution (in regard to braking).

Now a front-wheel-drive setup would put possibly as much as 60 per cent of the car's total weight on the front wheels. This imposes a severe strain (in larger cars) on steering and braking equipment. The only advantage of this type of assembly would be a completely flat floor. (Note that Corvair buyers stated that the flat floor was not the main reason for their particular choice and that they bought the car because of other features that appealed to them.)

Today, Detroit is trying to make their cars shorter. Front-wheel drive would make them much longer and mechanically complicated. Now, I am asking you, why is there so much emphasis on front-wheel drive?

I certainly hope the auto industry carries on with plans for rear-drive trans-axles and drops all plans for front-wheel drive.

David M. Stern      Bronx, N.Y.

### NO FRIEND OF THE WORKING MAN

I read Anton J. Tiller's letter describing "the perfect working man's car" (Oct. MT) and could not restrain myself from writing a reply.

I cannot deny that what he stated about the Fiat 600 is true, except that upon examination I found the car to be rather uncomfortable. However, how can he call it a "working man's car" when the sale of it is putting many working men out of work?

According to the figures I have before me, 10,314,073 people in the United States owe their existence to the automobile industry, which creates a payroll of over \$3 billion. We have been having a slight recession for some time now, and no one can convince me that it has not been partly due to the increase in the sales of imported autos.

Through experience I can say that the same people who boast the most about the few dollars they save on their import are also the ones that yell the loudest about the money they are losing when they are out of work.

continued on page 12





**THE HUMAN TOUCH ENSURES THAT ALL MERCEDES-BENZ TRANSMISSIONS WORK PERFECTLY.** This strange stethoscope is used by highly experienced technicians at the Mercedes-Benz plant in Unterturkheim. By listening closely to the transmission gears, they can determine whether or not any imperfections exist. Every Mercedes-Benz transmission is individually tested, running in first, second, third, fourth and reverse up to maximum rpm. Shifting action is checked. So is the synchromesh mechanism. First examination is made with the transmission disengaged from the engine. Then the entire procedure is repeated with the gear box and engine engaged, just as it will run in your Mercedes-Benz. Mercedes-Benz believes inspection to be the heart of quality. That is why every part of your Mercedes-Benz is checked and double-checked many times over.

Mercedes-Benz cars include sedans, convertibles and sports cars. Prices range from about \$3,300 to \$13,000. Ask your Mercedes-Benz dealer for a demonstration.

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## Letters

*continued*

Now, though, I am glad to see that the tide has turned and the U.S. is importing only 500,000 cars this year as opposed to over 600,000 last year. However, we are still importing 500,000 cars too many.

More power to the American compacts!

G. Ostrom

Miami, Fla.

### THERE'S A REASON

As the owner of a Thunderbird, I could not resist the temptation to answer some of the questions raised in the article on Thunderbirds in your September issue.

You wonder why the car is so popular in spite of its limitations. If you look around, you will find that the majority of Thunderbirds are owned by business and professional people—most of them in their middle age. Since most of the T-Birds owners either have another car or no longer have children living with them, they need to carry four passengers only on very infrequent occasions. Furthermore, since they want a functional car adapted to their needs, they are not interested in buying a car by the yard, with its attendant parking difficulties.

The trunk capacity is more than ample for the type of people driving Thunderbirds. They are usually well accustomed to airplane traveling and, therefore, know how to travel light.

I agree with you that steering is slow and not precise. While you were at it, you might have mentioned that the brakes are totally inadequate for the weight and power of the car.

Finally, your comment that the Thunderbird "styling is distinctive but certainly not noted for sheer beauty of line," is wholly a matter of opinion. As you know, beauty is either a purely subjective matter or set by custom and habit. To prove my point, I will simply cite the example of certain South Sea Islanders where the male population thinks that the highest standard of feminine beauty consists in a woman with no waist line and practically no neck.

Gilbert C. Delvaille Riverside, Calif.

### DESIGNERS—PLEASE NOTE

I sincerely wish that some influential American automobile designer would study the upper sketch of Bob Cumberland's Falcon drawings in the September issue.

Such clean, functional lines! The long, sloping hood terminating in an integral bumper and grille is delightful. The simple rear-end treatment also looks good from what I could distinguish in the sketch.

Bill L. Rush

San Diego, Calif.

## ADVANTAGES OF LIFT GATE

I must comment on your evaluation of the 1961 Ford Ranch Wagon in your October issue.

I was one of many people who bought a '60 Ford wagon because it was the only available wagon with the "old-fashioned" lift gate. It has many advantages over the unhandy crank-down rear window. The roll-down window is slow and uncomfortable in rainy or snowy weather, especially when you require entry into the rear of the wagon many times a day. The overhanging lift gate keeps snow and water off your head and neck. It is far quicker to open than a roll-down window.

Power windows, especially in tail gates, are a constant source of trouble. When they won't operate, the tail gate cannot be lowered.

Please consider these points when evaluating '61 wagons.

Cary E. Hohl

Brookfield, Conn.

While the roll-down rear window has a few advantages ventilation-wise, for sections of the country other than California and Florida, this is hardly worth praise. For anyone who is in and out of the back of his wagon very much in the other 48 states, the Ford's simple "push and pull" method is vastly superior.

As for your praise of the rear-facing third seat, I have owned both types of nine-passenger wagons, and I'll say here and now that the rear-facing seat is the most preposterous thing Detroit has ever come up with. And, I might add — it has come up with some beauts!

J.F.W.

Indianapolis, Ind.

## OOPS — OUR ERROR!

In the "Know Your Car" article in your October issue, I believe your explanation of illustration 19, page 59, is just the opposite of what does occur. When the points are set too wide, the dwell angle is too *small* — not too large — and the spark is *early* — not late.

Glenn Judd

Flushing, Mich.

The many letters we have received, pointing out this error, show that our eagle-eyed readers really "know their car." In the process of re-typing, the words "wide" and "close" were transposed. In illustration 19, sketch A, the points are set too close, and in sketch B they are too wide.

## WINFIELD CARBURETORS

Are Winfield carburetors being manufactured any more? If so, by whom, and are they available for late-model cars?

Harold A. Spellman Fair Oaks, Calif.

Winfield carburetors haven't been manufactured for 25 years.

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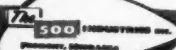
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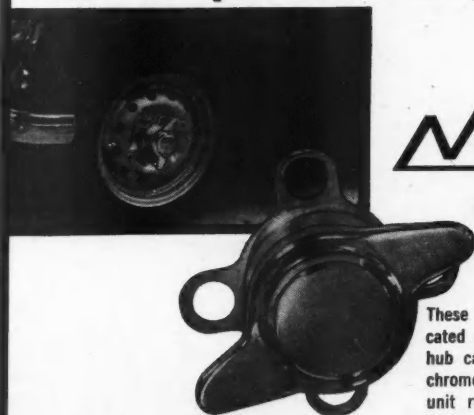
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# MOTOR TRENDS

## TEMPEST POWER MAY BE CHANGED

The next all-new compact car engine out of GM is rumored for the Pontiac Tempest. Current slanted Four is a compromise design, adapted from the big V-8, and is somewhat heavier than it should be for a compact car (though smoothness, performance and economy are satisfactory). If the new compacts really sell investment in new engine will be authorized for introduction around 1963. First reports indicate that it will be a V-6.

## ALUMINUM BLOCKS IN '61 PLYMOUTH

Chrysler will install about 20,000 six-cylinder aluminum blocks in some special 1961 Plymouths and Valiants. About one in 10 Sixes will get new block on the assembly line, and buyers can specify it at no extra cost. Chrysler hopes to work the bugs out of aluminum construction by starting slow, building up gradually to full output for '62. Blocks will be die-cast (as on new Rambler Six) and will use present cast-iron head, manifold, etc. Engine weighs 200 pounds less.

## TALCUM POWDER FOR QUIET TIRES

Research shows that talc, a mineral containing magnesium and silicon, can be mixed with normal carbon black to give rubber compounds more strength and stretchability. Tires so made are quieter, show less heat buildup, are easier to process.

## OLDS PLANS STYLE CHANGE

Some Oldsmobile officials are already dissatisfied with 1961 big car body styling. Even before the '61s hit the showrooms plans were well under way to scrap fender dies and start all over for next year. Same body shell will be used, but new Olds will be entirely different on front, rear and sides. In spite of these mixed emotions over their big product, the Rocket people are very pleased with the appearance of their little F-85.

## NEW WARRANTY FORD VICTORY

Detroit is still buzzing over Ford's lengthening of their new-car warranty period of 12 months or 12,000 miles. It

caught the other companies completely by surprise. They were forced to jump on the bandwagon overnight, thus appearing to copy Ford.

## NEW LUBE SYSTEM SPURS RESEARCH

Ford and Cadillac's new extended chassis lubrication period has caught the public fancy. Most of the auto companies have

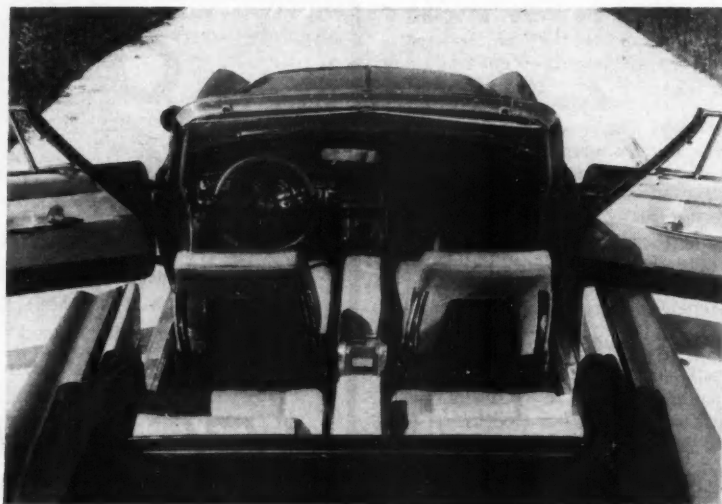
been spending much time and money researching similar reduced maintenance features. The 1961 breakthroughs will speed up more announcements, and probably before the 1962 model season.

## ALUMINUM MODIFICATIONS ARE STILL PLANNED

Detroit hasn't given up on hard silicon-aluminum alloys for engines. Early



Powered by the same 375-hp, ram-induction engine as last year's model, the new Chrysler 300-G has made its debut. Styling changes conform with those in the regular Chrysler line and the exclusive 300 interior continues to feature four separate bucket seats. For better brake cooling, 15-inch wheels replaced previous 14-inch size and wheel covers are slotted. Body types are hardtop and convertible.





plans to build light aluminum blocks without separate iron cylinder sleeves were blasted when silicon alloys proved hard to cast and machine. Current designs use softer alloys with cast-in sleeves. But round-the-clock research continues, and the problem may be solved within a year.

#### **IMPORTS READY TO FIGHT BACK**

European small car makers have an ace-in-the-hole to meet the challenge of coming U.S. ultra-compacts. As a result of new distributor alignments, most of the companies can afford to cut prices \$200 or more and still make a decent profit. Profit margins are broad now (although recent competition from domestic compacts has shaved this some). The factories would bear part of the proposed cut, the dealers the rest. Can Ford's coming small Cardinal compete with \$1500 Volkswagens?

#### **V-8'S DROP IN POPULARITY**

Final figures of 1960 model sales indicate that the V-8 powerplant has slipped to a popularity level of only 56.5 per cent of the market. This is the lowest percentage since 1954.

#### **TAUNUS DROPS FROM SCENE**

First of the major imports to be frozen out of U.S. showrooms in Detroit's "compact cold war" is the Ford Taunus. Officials of the Lincoln-Mercury Division have announced that they do "not now have plans" to import the 1961 model of the car.

#### **STRIPPED SPECIALS MADE AVAILABLE**

Buick headquarters made sure that all dealers had at least one stripped stick-shift Special in stock by their announcement date. Falcon stole many early sales from Corvair last year because they had their lowest-priced models in stock for economy buyers. Corvair concentrated early production on deluxe models with automatic transmissions. Buick officials were determined not to be tempted into this mistake. Salesmen push the deluxe jobs, of course, but stripped versions are in the back room for stubborn buyers.

## **MEMO TO: THE AMERICAN MOTORIST**

### **SUBJECT: THE 1961 CAR OF THE YEAR**

Long before the 1961 cars were officially unveiled, members of the MOTOR TREND staff began the involved process of driving and evaluating every one of the new models. That period of testing and digesting what's new, what's improved, what's right and what's wrong with Detroit's latest offspring is still underway. An unprecedented number of new cars and engineering developments has made the final selection increasingly difficult. But the list of contenders has narrowed to a very few. The final selection is about to be made.

The Annual Motor Trend Award for  
the 1961 Car of the Year  
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## PININFARINA STYLES VARIATIONS ON THE CORVAIR AND FERRARI

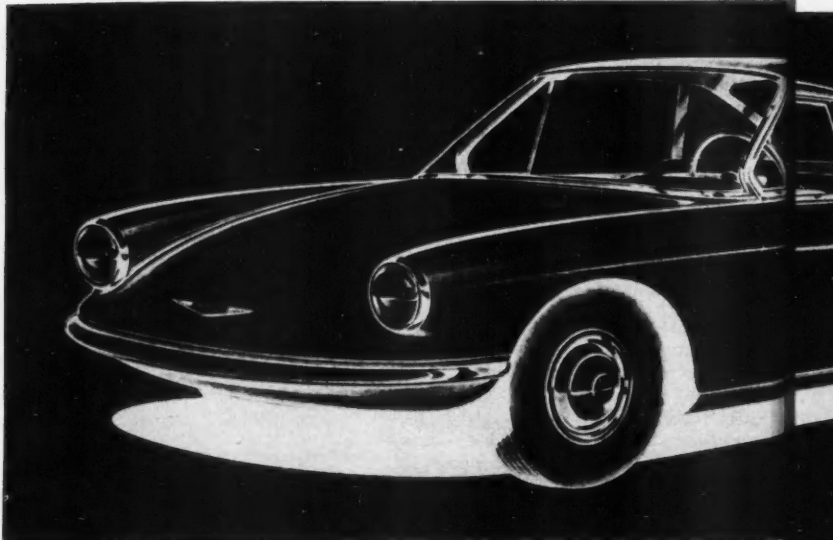
**F**RESH IDEAS in body design are to be expected of Pinin Farina, the master stylist of the Italian motor industry. But, for this year's Paris Show, he produced a pair of special exhibits that surpass even his usual originality.

First, he took the world's most coveted two-seater, the Ferrari, and turned it into a sleek four-place coupe. Then, he adapted the six-passenger Chevrolet Corvaire to a sports design for two!

The Ferrari, mounted on the famous

250-GT chassis and described as a "two-plus-two-seater," was first described by Gordon Wilkins in the October issue of MOTOR TREND. It has the same wheelbase as normal, two-place versions of the car, but the engine and gearbox have been moved forward to create a more spacious interior. Overall length is actually a bit less than that of the standard coupe.

At the front, the traditional Ferrari grille is featured, though scaled down to conform with the new body style's con-



With the same wheelbase as two-seater Ferraris, Farina's 250-GT coupe accommodates 4 passengers.

servative appearance. The rear is highlighted by a "fastback" treatment. Ornamentation is kept to a minimum on all parts of the body.

Front seats are contour-shaped buckets, while rear passengers are held in place by center and side armrests. One novel touch is a cutout in the rear of the front seat-backs to increase rear kneeroom.

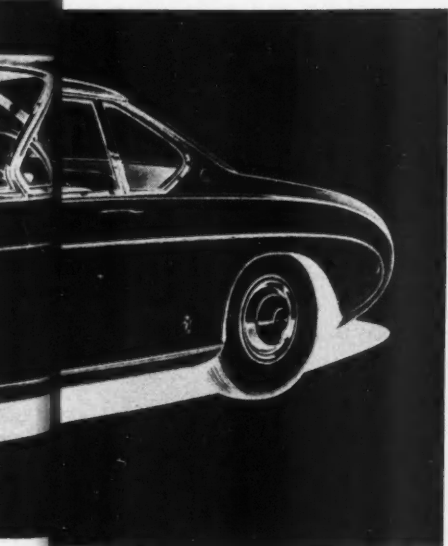
Perhaps even more impressive is the special coupe design for the Chevrolet Corvair. Because the standard version of the car has a unit body, Farina had to create an entirely new structure as well as a new style. The wheelbase was shortened approximately seven inches for a sports car flavor.

The car is truly aerodynamic in design. The hood slopes forward with smooth, curved lines, featuring a hollow treatment at the extreme front which increases air pressure and, thereby, weight on the front wheels.

The individual seats are built in such a way that the cushion and back do not "creep" in relation to each other, a common discomfort with most such contoured units. In the car built for display in Paris, the interior is finished in a very light tan leather.

Created as a show car, the Corvair by Farina is not expected to appear as a production model. /MT

The master touch of Italy's best known stylist has been applied to America's most unusual car; here is Farina's new two-seater for the Chevrolet Corvair.



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# TESTING THE FORD, CHEVROLET, AND DART



**MOTOR TREND** / January 1961

beginning the 1961 REPORTS with a new, more



**D**ESPITE ALL THE TALK of compact cars, the most popular American automobiles still are those of the standard size in what still is called the "low-priced" field. No one in Detroit, or outside of it, really knows whether the new compacts will surpass the low-priced standards in popularity, or remain as a secondary group.

While the compacts have their virtues, they also have their limitations—and to millions of drivers the standard Ford, Chevrolet, and Dart are among the cars they look to first when the time comes to buy.

There are many excellent reasons for considering the low-priced standards. The difference in price, from the compacts, is not excessive and there are some added benefits. The capacity is generally greater, riding comfort is certainly superior (due to a longer wheelbase), the range of engine, transmission and axle options, along with the convenience group of accessories, is vastly greater. And, curiously, the very quality of materials, assembly and finish of the low-priced cars on the overall average is far better than the extra price over the compact cars would indicate.

To inaugurate the 1961 testing season MOTOR TREND has put the V-8 versions of three important low-price cars under study. But the cars themselves are not all that is new in these tests. As you will see on the next 24 pages the test reports themselves have a new look. In each analysis more than one car, more than one power package has been driven and reported upon by the MOTOR TREND staff. In addition to reports upon the cars tested there is a complete study of the engine, transmission and axle ratio options offered by that make of car. The reader can determine what combination he should choose in buying a car to fit his needs. With two of the tests detailed cutaway drawings are included to complete the full technical report.

These new tests in depth, MOTOR TREND's 1961 "Full Range Road Tests," will be an exclusive feature on these pages throughout the year. In coming months all of the important Detroit cars will receive the full attention and analysis that only MOTOR TREND with its complete and experienced staff and facilities can offer. /MT



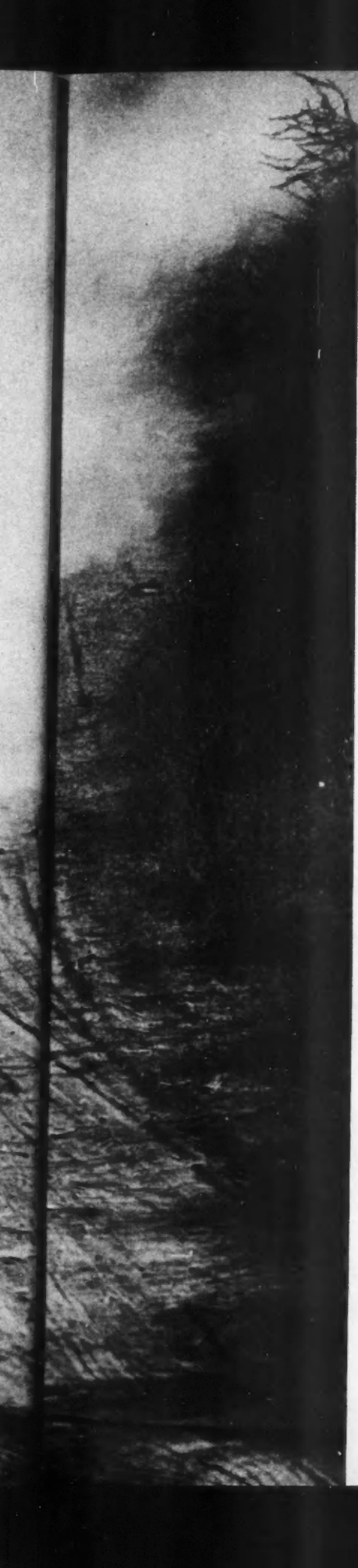
e complete version of the Motor Trend Road Test

# Full Range **ROAD TEST**



## The '61 Ford V-8's

testing the eight-cylinder  
engines... choosing the right options  
for power and economy



**T**HERE ARE FEW definite turning points in an automobile's development. But 1961 may be the year that Ford Motor Company established a new, or more accurately, re-established the old, meaning of the word "Ford" to car enthusiasts and the general public.

And this new image has little to do with the styling, the self-adjusting brakes or the 30,000-mile lubrication system. Granted, the mechanical changes are commendable and desirable advancements — but something far more important and significant has happened to the Ford line. This year the car has quality of construction far superior to recent years, and, most important, a re-engineered V-8 that in its regular production form will make performance enthusiasts happy. Moreover, two even more potent versions could put Ford at the top of the list in stock car competition events. Rounding out the V-8 picture are Ford's familiar economy engines.

Performance, however, is only one of the major factors in Ford's overall picture, and to accurately analyze the full range of the line's potential, MOTOR TREND selected two test cars. One was a four-door hardtop with the most popular economy V-8 option Ford has to offer: the 292-cubic-inch ohv powerplant that produces 175 hp and 279 lbs.-ft. of torque at 2200 rpm. This engine, with two-barrel carburetion and 8.8-to-1 compression ratio, is virtually unchanged from last year. It was coupled to Ford's two-speed automatic and had the factory-recommended 3.10-to-1 rear axle ratio.

Both test cars were hardtops, but the performance model was a two-door body style. This car was equipped with Ford's biggest engine option, the new 390-cubic-inch powerplant with a single four-barrel carburetor. In this version the 390 turns 300 hp and a fat 427 lbs.-ft. of torque at 2800 rpm. The axle ratio was also factory recommended, 2.91-to-1, and the transmission was Ford's three-speed automatic.

Unlike some other comparisons between top economy and top performance makes in Ford's class, the economy V-8 differed greatly from its performance counterpart during the acceleration tests. The more than six seconds slower time at the 0-60-mph mark tells the entire story. Acceleration from a standing start is much slower and reserve power for passing in the 40-60-mph range is naturally limited.

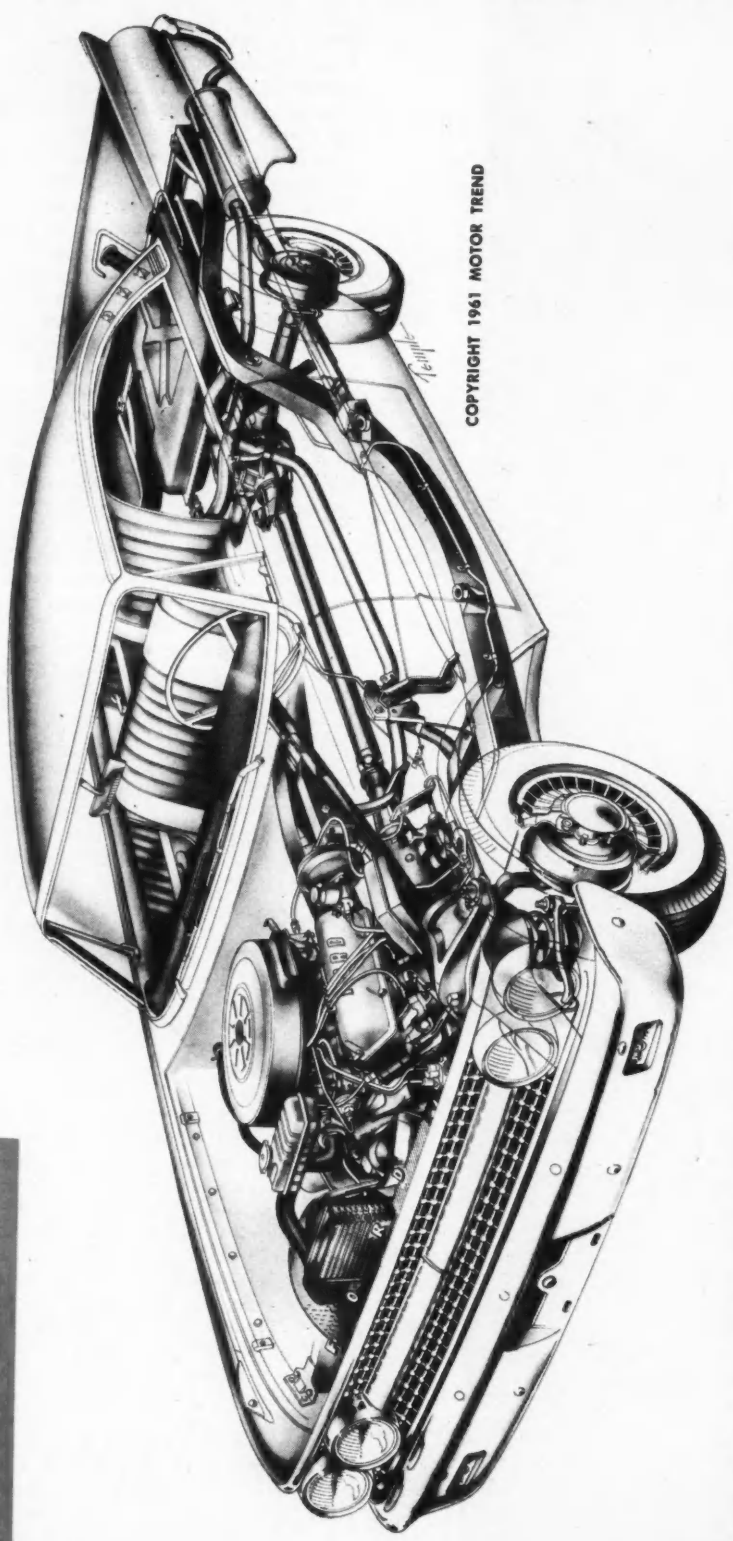
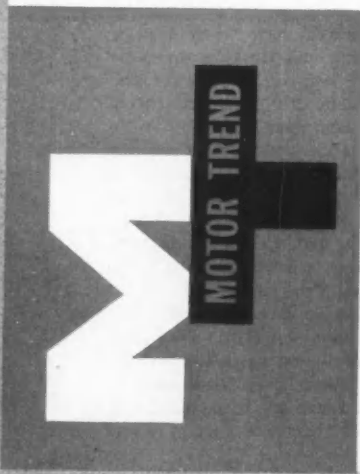
Of course, this is not a criticism of the 292's performance. The engine does have its purpose — economy. And when considered on this basis, Ford's 292 will be very near the top economy engines of this displacement. The individual who passes up the 292 as an inadequate engine probably is one who thinks only in terms of performance.

MOTOR TREND's second test car had Ford's newest powerplant, the 390, which is capable of bringing this performance image to life. Essentially, Ford engineers have taken a page from the hot rodder's book by boring and stroking the 352. The horsepower remains identical to last year's rating for the 352 with four-barrel carburetion, while the torque has been increased 46 lbs.-ft. to 427 at the same rpm, 2800.

Compared to last year's performance option with similar power train, this hopping-up has sliced nearly a second and a half off the 0-60-mph time and brings Ford's most popular performance V-8 well within the range of average to better-than-average hot cars. Not only has the acceleration from a standing start been improved, the reserve passing power is much better. At any speed from 20 to 60 mph the engine will rev up quickly and powerfully to give the car an extra burst of speed.

Coupled to the 292-cubic-inch engine was Ford's two-speed automatic, the Fordomatic. This transmission has a torque converter, planetary gear system and shifts gears hydraulically. It is a fairly smooth-operating transmission with practically no indication of rough shift points during a normal accel-





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# 1961 FORD

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*Inside the passenger compartment of all new Fords there appears to be a definite upgrading of the quality of materials and construction. Standard on the 390 engine is a crankcase ventilating system.*

eration. However, if the accelerator pedal is held past detent, forcing the transmission to stay in low to approximately 55 mph, the shift point is abrupt. Engine power seems to drop off considerably due to lack of a second gear, which is one reason for the somewhat poor 0-to-60-mph time.

The second test car was equipped with Ford's three-speed automatic, the Cruiseomatic. This transmission has a three-element torque converter with fixed stator and also shifts gears hydraulically. It is an excellent automatic in that it gives the driver some control over the gear being used and shift point selection. There are three positions for forward speeds, D1, D2 and Lo, although this year they are not marked as such on the shift indicator. Instead there are dots which indicate the location but do not identify the exact range selected. For a full three-gear start D1 can be selected. When in the D2 location the transmission becomes in effect a two-speed automatic, and low gear is not used. This position has little value for normal driving situations and it is actually difficult to understand why it is even included. Economy is not improved by starting in second and no appreciable gain in performance was discernible during the acceleration tests. For difficult driving, or for braking compression on downhill grades, the Lo range locks the car in low gear.

However, there is one unusual feature about this transmission — without being too complicated, it can be shifted manually if the driver is so inclined. Starting in low gear and running the car at full throttle up to 30 mph or more, then shifting into drive and immediately re-shifting back to the low range holds the transmission in second until it is once again shifted into drive. This is an excellent arrangement for those who are interested in maximum acceleration potential.

In faster traffic the Cruiseomatic was efficient when it was necessary to build up speed gradually and exceptionally lively when the throttle was depressed, engaging the next lowest gear for passing. Of course, much of this can be credited to the increased displacement and extra torque of the 390-cubic-inch engine. But it must also be remembered that the 2.91-to-1 axle ratio is not exactly high-performance gearing.

This year the Cruiseomatic is 25 pounds lighter and uses a vacuum throttle valve control instead of mechanical linkage from the accelerator pedal to select shift points automatically. Neither change made any very apparent difference in the way the transmission responded.

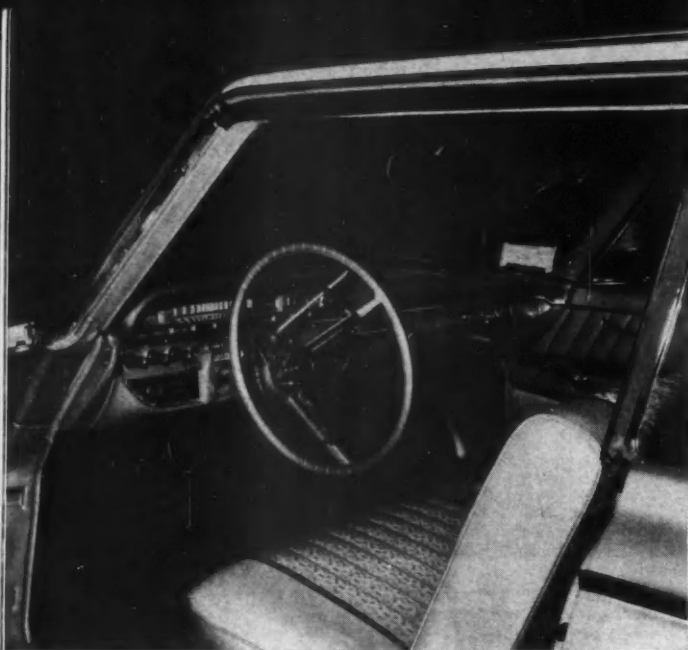
Recently Ford has been making some concessions to a smoother ride. This year nearly all body types have a thinner main leaf in the rear springs, and consequently a somewhat softer suspension. Unfortunately, this does not seem to make any appreciable refinement in the ride and it certainly does not improve overall handling qualities.

Not too many years ago Ford could out-corner any car in its size and price class. This is definitely not true today and can undoubtedly be traced to the increased emphasis on a softer ride. While body stability during hard cornering tests was judged to be slightly better this year, body lean was noticeable and tire squeal became apparent sooner than it should have. Both these reactions tended to give a cautious driver a lack of confidence in the car's actual cornering potential.

In its ability to absorb road shocks the Ford is best at slower speeds over moderately rough surfaces, with perhaps the least small-bump harshness of any car in its class. As speed and roughness increase, this ability is lessened and the ride seems to suffer from a certain amount of wallowing from side to side. This, also, is probably a fault of the softer suspension. The effect, however, was not judged objectionable unless the road was extremely bad or the speed excessive.

On smooth highways at relatively high speeds the Ford had good, but not superior, stability. As might be expected, the softer suspension contributed to a certain amount of floating at higher speeds, but by no means enough to be detrimental to overall comfort. On long, shallow dips the car did not move out violently, nor did it set up several long, undulating wave movements which are often a complaint of the softer ride.

Those impressions about the car's ride that were judged unfavorably were greatly exaggerated by the steering. Both cars were equipped with power-assist units and the 4.5 turns lock-to-lock are considerably slower than it actually needs to be. Slow-speed maneuvers and parking, of course, are effortless and are made relatively easier this year due to the smaller external dimensions. However, at normal speeds there is a singular lack of preciseness that makes turning judgment difficult. This is especially true on long, winding roads, where little road feel through the steering wheel gives the driver an unduly enlarged indication of poor handling. This is not necessarily always the case and in most situations the car was actually handling better than it seemed to indicate. Overall



the car handles well enough for moderate to moderately hot driving and is certainly acceptable for all types of family-use driving.

Although the 1961 Ford is 3.7 inches shorter and 1.6 inches narrower, there have been no noticeable changes in interior passenger comfort dimensions. The passenger compartment is generous for four and has adequate space available to seat six persons in fair comfort for trips of moderate duration.

Probably the least desirable dimension inside the Ford is the low height of the bench seats. For long trips the driver becomes more and more convinced that he is sitting on the floor, and the stretched-out position of his legs will tire him more quickly.

Those who are familiar with Ford cars will notice one important and quite significant difference inside the car. There is a definite upgrading of the overall level of quality inside the passenger compartment. Actually the interior is little changed in appearance from last year — the big difference is in detail quality. Materials are better, moldings fit well, trims are attached firmly and accents are chosen with taste. This is evident not only in the craftsmanship in finishing the interior, but in the preliminary design that went into it.

This may indicate that Ford is putting more emphasis on quality, both on the production line and getting it from its suppliers. One example that points this out sharply is the more stringent durability and quality control requirements issued at the beginning of the model year. All chrome-plated parts must be more uniformly plated; aluminum parts have  $2\frac{1}{2}$  times more anodized coating and stainless steel specifications are more critical. While the Ford's interior is still not the most luxurious in its class, it is, in evaluating the 1961 model, much closer to the top than it has ever been and is perhaps the best Ford has offered in years.

Few major changes in available luggage space resulted from the new styling, but the trunk opening is relatively improved. The lid, which last year was comparatively narrow, is now nearly 10 inches wider, providing increased accessibility to the trunk compartment. And, although loading height and trunk volume remain about the same, the spare tire has been relocated near the front of the trunk to allow more usable space.

For performance enthusiasts, the option picture is brighter this year, while little has been done to alter the situation for economy drivers.

*Access to the driver's seat doesn't strain the muscles. Appearance is much the same as last year but the detail finishing is far better in 1961.*

The best V-8 choice for economy is the 292-cubic-inch engine that powered one of MT's test cars. This powerplant was, in 1956, the performance option offered for the Thunderbird. But in its present detuned form it is capable of excellent economy.

Ford has an in-between V-8 for those who like a little more powerful car yet don't want the expense of operating an out-and-out performance model. This is the familiar 352-cubic-inch engine, which has slightly less horsepower and torque than last year. The new ratings are 220 hp at 4400 rpm and 336 lbs.-ft. torque at 2400 rpm. This engine should have a somewhat better showing than the 292 in acceleration from a standstill and even better in reserve power for passing, where the extra cubic inches are usually more important. The compression ratio, 8.9-to-1, is exceptionally close to the accepted limits for regular gasoline and it is reasonable to assume that premium fuel might be necessary.

Biggest of Ford's V-8's is the potent 390-cubic-inch powerplant that was tested for this report. Besides the 300-hp, there are two other versions. One, the 390 Police Special V-8, turns out 330 hp at 5000 rpm. The other, the 390 High Performance V-8, produces 375 hp at 6000 rpm. Both produce 427 lbs.-ft. of torque, the Police Special peaking at 3200 rpm, and the High Performance at 3400 rpm.

Ford has four transmissions: three-speed manual, three-speed manual with overdrive, and the automatics which were discussed previously. For economy the order of preference would be: overdrive, manual, three-speed automatic and two-speed automatic. Since the gear ratios are the same in the manual and the overdrive, they would be equivalent and the first choice for top performance. Not far behind in preference, however, would be Ford's three-speed automatic, the Cruiseomatic. This automatic is rated higher than the two-speed Fordomatic because of its manual control of gears and speed-shift feature.

As regular production options Ford offers four axle ratios: 2.91, 3.10, 3.56 and 3.89. In the choice of axle ratios MT would advise sticking with the factory recommendations unless the major portion of driving is done in terrain that is not altogether normal. An example would be going to a higher numerical ratio for mountain driving or in the case of a competition-minded dragster.

Naturally, Ford has a long list of other options that will change the acceleration or handling. One of these, a limited-slip differential, could be of interest to either the performance enthusiast or the person who drives over soft or slick surface roads a good deal. There are also many suspension, chassis and brake changes available. And those who are considering the bigger engines should also give thought to bigger brakes, stiffer shocks and heavy-duty springs. Many of these options are dealer installed and do not need to be ordered when the car is manufactured.

One reason for the somewhat optimistic view of Ford's chances of being one of the hottest stock cars this year can be traced to last year's results with the performance version of the 352. With a limited-production optional axle, 4.89-to-1, this car did 0-60 mph in 7.1 seconds and turned over 150 mph. This year the 390 has even more power and the car weighs less.

There is, however, a note of pessimism. Ford has been reluctant to make their top performance options easily available. Those who want it have had difficulty in getting the factory to supply the car. Another disadvantage is the price of the high-numerical gearsets. Anything over 4-to-1 — and these go to 5.83 — has cost over \$200, and this price is beyond the means of many buyers. So Ford's out-and-out performance picture is slightly clouded by the availability of these options to the general public.

/MT

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## MOTOR TREND



### Test Car

TEST CAR: Ford Galaxie  
BODY TYPE: 2-door hardtop  
BASE PRICE: \$2713

TEST CAR: Ford Galaxie  
BODY TYPE: 4-door hardtop  
BASE PRICE: \$2778

### Maneuverability Factors

OVERALL LENGTH: 209.9 inches  
OVERALL WIDTH: 79.9 inches  
OVERALL HEIGHT: 55 inches  
WHEELBASE: 119 inches  
TREAD, FRONT/REAR: 61 and 60 inches  
TEST WEIGHT: 3723 lbs.  
WEIGHT DISTRIBUTION: 55 per cent on front wheels  
STEERING: 4.5 turns lock-to-lock  
TURNING CIRCLE: 41.2 feet curb-to-curb  
GROUND CLEARANCE: 5.5 inches

OVERALL LENGTH: 209.9 inches  
OVERALL WIDTH: 79.9 inches  
OVERALL HEIGHT: 55 inches  
WHEELBASE: 119 inches  
TREAD, FRONT/REAR: 61 and 60 inches  
TEST WEIGHT: 3680 lbs.  
WEIGHT DISTRIBUTION: 54 per cent on front wheels  
STEERING: 4.5 turns lock-to-lock  
TURNING CIRCLE: 41.2 feet curb-to-curb  
GROUND CLEARANCE: 5.5 inches

### Interior Room

SEATING CAPACITY: Six  
FRONT SEAT  
HEADROOM: 38.2 inches  
WIDTH: 62.1 inches  
LEGROOM: 45.3 inches  
TRUNK CAPACITY: 29.7 cubic feet

SEATING CAPACITY: Six  
FRONT SEAT  
HEADROOM: 38.2 inches  
WIDTH: 62.1 inches  
LEGROOM: 45.3 inches  
TRUNK CAPACITY: 29.7 cubic feet

### Engine and Drive Train

TYPE: Ohv V-8  
DISPLACEMENT: 390 cubic inches  
BORE & STROKE: 4.05 x 3.78  
COMPRESSION RATIO: 9.6-to-1  
CARBURETION: Single 4-barrel  
HORSEPOWER: 300 @ 4600 rpm  
TORQUE: 427 lbs.-ft. @ 2800 rpm  
TRANSMISSION: Three-speed automatic  
REAR AXLE RATIO: 2.91

TYPE: Ohv V-8  
DISPLACEMENT: 292 cubic inches  
BORE & STROKE: 3.75 x 3.30  
COMPRESSION RATIO: 8.8-to-1  
CARBURETION: Single 2-barrel  
HORSEPOWER: 175 @ 4200 rpm  
TORQUE: 279 lbs.-ft. @ 2200 rpm  
TRANSMISSION: Two-speed automatic  
REAR AXLE RATIO: 3.10

### Performance

GAS MILEAGE: 10 to 14 miles per gallon  
ACCELERATION: 0-30 mph in 3.7 seconds, 0-45 mph in 6 seconds and 0-60 mph in 9.8 seconds  
SPEEDOMETER ERROR: Indicated 30, 45 and 60 mph are actual 30, 47 and 62 mph respectively  
ODOMETER ERROR: Indicated 100 miles is actual 106 miles  
WEIGHT-POWER RATIO: 12.6 lbs. per horsepower  
HORSEPOWER PER CUBIC INCH: .787

GAS MILEAGE: 12 to 16 miles per gallon  
ACCELERATION: 0-30 mph in 5.5 seconds, 0-45 mph in 9.8 seconds and 0-60 mph in 16.2 seconds  
SPEEDOMETER ERROR: Indicated 30, 45 and 60 mph are actual 31, 46 and 60.5 mph respectively  
ODOMETER ERROR: Indicated 100 miles is actual 102 miles  
WEIGHT-POWER RATIO: 21.1 lbs. per horsepower  
HORSEPOWER PER CUBIC INCH: .627



**P**ROBABLY NO OTHER American car would be half as difficult as Chevrolet to pin down to a set of rigid overall characteristics. Two identical body styles can have power trains which are no more alike than are the atom and the atom bomb. Similarly, the person who owns a Biscayne Fleetmaster with its vinyl seat covering, plain sidewalls and black rubber floor mat will have a far different impression of the car's interior from someone who owns an Impala with its more luxurious cloth upholstery, bright metal scuff accents, padded sidewalls and deep pile carpet on the floor.

But even though Chevrolet has literally hundreds of options, there are certain basic fundamentals which are the same, regardless of which body style or power train option is chosen. To analyze these characteristics, MOTOR TREND selected two off-the-production-line 1961 models with options which have proved to be the most popular in recent years.

Both test cars were plush Impalas. One was equipped with the 348-cubic-inch V-8 that turns out 250 horsepower and produces 355 lbs.-ft. of torque at 2800 rpm. Coupled to the engine was Chevrolet's Turboglide automatic transmission, and the rear axle ratio was 3.08-to-1. The second car had an identical axle ratio but was equipped with Powerglide transmission. Its powerplant was the 283-cubic-inch V-8, rated at 170 horsepower and turning out 275 lbs.-ft. of torque at 2200 rpm.

The performance of both engines was lively, and as might be expected, the fastest acceleration and punchiest response was recorded by the 348. In out-and-out acceleration runs this difference was not as widely separated as might have been surmised without testing. A glance at the test data box will show that the 283 was less than two seconds slower at the 60-mph mark. This, of course, concerns only straight acceleration, and the extra cubic inches began to pull their weight during throttle-response tests at traffic speeds. This was especially true in the 30-to-60 mph range. These are the speeds where most reserve power for passing is needed. The 348 had ample horsepower on call and responded quicker. In accelerating from 40 to 70 mph, for example, the big engine was far superior to the 283 and made the two seconds separating them at 60 mph from a dead stop

more expensive Turboglide lies in its smooth response. Acceleration comes in a steady, but powerful, thrust with no perceptible shift points.

To gain added power for passing, the Turboglide does not have an ordinary kick-down gear. Instead, the torque converter has a two-position stator and depressing the accelerator pedal through detent changes the stator to its performance position. By changing the stator angle, oil is redirected, bringing into action the next lower turbine. For example, if the stator blades are changed when the car is in cruising speed the second turbine (and frequently the first) is brought into play, multiplying the torque for getaway acceleration.

This device was judged to be equivalent, but not superior to, a straight kick-down gear. It is certainly adequate for all normal and many emergency passing situations. Apparently high engine rpm's are necessary for ideal performance, and the unit seemed to respond better at speeds above 35 mph. Naturally, the variable-pitch benefit increases with the more powerful engines, all of which are designed to operate at a little higher rpm.

The Turboglide's two-position stator also eliminates the necessity for providing a lock-in low gear for downhill grades. A grade retarder, marked "G" on the shift indicator, replaces this range found on most automatics. This position will provide excellent downhill braking and will absorb up to 60 horsepower.

Chevrolet's grade retarder is probably the most efficient compression braking found in present automatic transmissions. Unfortunately, for many persons it will be too efficient. The car is held back to such slow speeds that many experienced drivers will complain. But for the person who is skittish about driving on steep mountain grades, it is just the thing. Another advantage is that the car can be easily push-started when the battery is low.

The two-door Impala was equipped with Chevrolet's familiar Powerglide transmission. This automatic consists primarily of a hydraulic torque converter bolted to the engine flywheel, which drives a two-speed planetary gearset.

Driving with the Powerglide was slightly different from the Turboglide. Response seemed more efficient and perhaps even helped to create the impression that the smaller engine was

**the '61**

# **chevrolet**

seem insignificant. The 348, however, idled rougher and was judged to be the noisier of the two. Neither engine, though, would interfere with normal conversation at any speed.

The four-door Impala test car was equipped with Chevrolet's Turboglide automatic. This transmission is a non-shifting hydraulically controlled, torque converter-planetary gearset unit.

The torque converter has three turbines and each drives a separate shaft. The first and second turbines are connected to the rear and front planet gear sets, respectively. The third connects directly to the transmission output shaft. At first the car is driven by all three turbines, then the second and third, and finally, at cruising speed, by the third turbine alone. Since the first and second turbines are connected with one-way clutches, both free-wheel when the engine rpm's go past their potential.

In MOTOR TREND's opinion the biggest advantage of the

producing more power than it actually did. From zero to 60 mph there was little apparent difference between the two cars, although beyond this speed and in the passing range the difference became more pronounced.

Evaluating Chevrolet's two automatics, it seems that the Turboglide would be a wise choice for the moderate driver who prefers smooth performance. The Powerglide would be more suited to the individual who prefers more positive action — and perhaps a little better for acceleration enthusiasts.

The engines and accompanying transmissions were responsible for the only major differences between MOTOR TREND's test cars. All other factors of handling were the same, and even the slight weight discrepancies made no distinct contrast. Therefore, the two Impalas can be discussed as one in this area.

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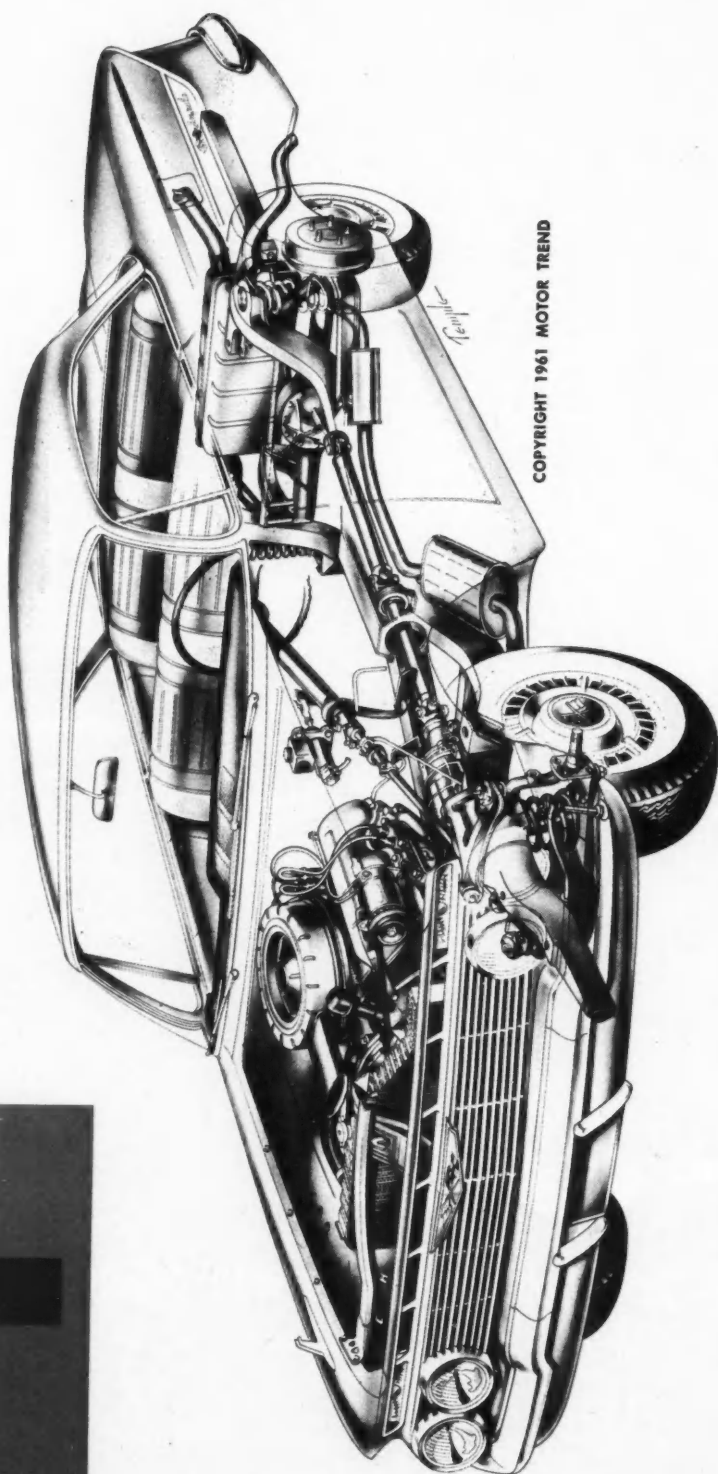
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# V-8's

different personalities emerge with power option changes

# 1961 CHEVROLET



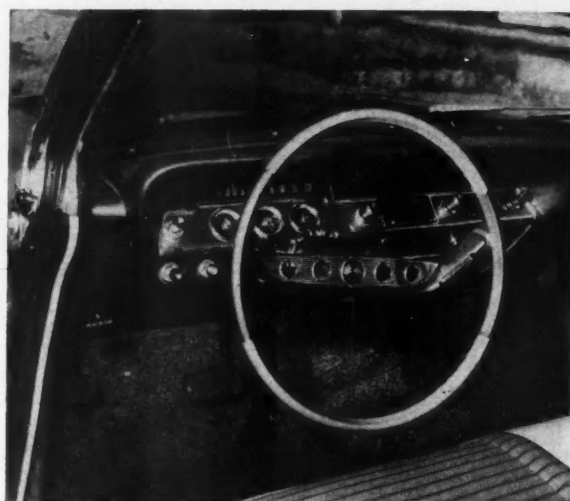
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*Chevy has made the first sensible change in trunk design in years. The new storage well is made possible by moving the gas tank (see cutaway drawing).*



*In trend with the times, Chevy has abandoned the windshield dogleg to facilitate entrance and exit. A re-designed instrument cluster is under a big new hood.*

Both front and rear suspension consist of coil springs with shock absorbers all around to help control lateral stability. The springing is somewhat softer than average and contributed to a smooth ride at any speed. The ability of the suspension to absorb small road shocks, such as tar divider strips, is probably the best in Chevrolet's class. As uneven road surfaces become higher or deeper, this ability is lessened. Chevrolet's ride is best on smoother roads, and there is very little evidence of either reasonably rough roads or speed until one or both situations become excessive.

Cornering ability, while acceptable, was judged to be only fair for Chevrolet's class. Corners could be taken at normal speeds, but not much faster. Body lean was considerable, and the front outside wheel occasionally seemed to "skate" and convey the impression that control was difficult to maintain. However, Chevrolet's cornering speed must be excessive before any control is lost. At highway speeds the car had excellent stability, with practically no tendency for the front end to float nor to manifest the long undulating motions that frequently contribute to "motion" sickness.

Both test cars had power steering. While the power unit is undeniably a worthwhile investment for the V-8 model, it has not taken full advantage of the power assist. Steering is slow, 5.2 turns lock-to-lock, and too much twisting of the wheel is necessary to maneuver the car. In parking, the steering wheel must be literally spun around to negotiate into a tight space, and on tight mountain turns the driver will find the excessive steering wheel action exaggerating the curves.

Chevrolet's 1961 mechanical changes are few and have made no perceptible difference in the car's handling or performance. A good example is the new tapered roller bearings in the front wheels, which will contribute to longer life but do not change the handling. What is new this year is a slightly changed frame with an all-new body that has important gains in interior dimensions.

The four-door sedan test car is typical of most models, and overall length, width and height are reduced 1.5, 2.4 and .5 inches respectively. Yet with these smaller overall dimensions, door openings are bigger and passenger comfort improved.

The dogleg is gone, and the front door has an additional width of 5.4 inches at the belt line and the rear door gains almost three. This makes entry and exit from either seat the best it has been in years. Seat benches are higher, and the angle is somewhat better for the driver's comfort.

While headroom, hiproom and legroom have changed little, the tunnel hump is narrower and 1.5 inches lower. The third passenger in the rear seat now has a fair chance to be comfortable over long periods. Strangely enough, the Impala has a sewn roll which simulates bucket seats, and these rolls could cancel out the middle passenger's comfort gained through the additional legroom. This is a feature not found on less expensive models, however, and with no bump in the seat back and bench to interfere with comfort, the middle passenger should be fairly well seated for trips of moderately long length.

The Impala's seats were judged to be a trifle soft for maximum comfort, especially on longer trips. This, of course, is a matter of individual preference. Some persons prefer the softer upholstery and they will be more than pleased with the somewhat less firm Impala seats.

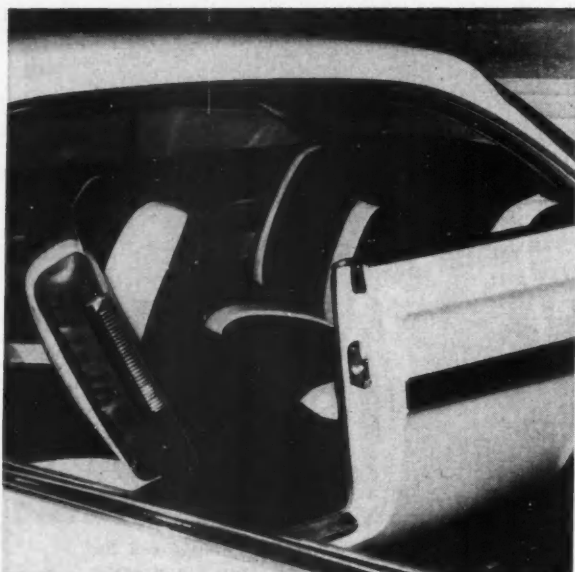
Overall, the quality of Chevrolet's interior, both in choice of materials and attention paid to detail construction and design, is probably the best in its class. Floor covering, side panels, metal trim and hardware harmonize, fit well, and are installed with careful quality control. In this area of evaluation Chevrolet's Impala can hold its own, and probably even surpass, many of the cheaper models of the medium-priced luxury range of American cars.

Chevrolet's dash panel has been completely revised, and there are many changes that are good improvements. One is moving the glove compartment, which is still too shallow to be of much use, over to the center, where the driver can reach it without straining. This year the driver controls, including the right air vent control, are all within easy reach. The instruments, except the speedometer, are round and easy to read. Indicator lights, unfortunately, are not as legible. The brake indicator and warning lights are deep red on a background of solid black and very difficult to see during the day.

The ignition switch has an added accessory position this year, which is almost a necessary feature. The key must be used, which prevents someone playing the radio when the car is left unattended. Incidentally, all electrical terminals of the ignition are enclosed in a plastic connector and cannot be removed or cross-wired around the ignition switch unless the connector is removed. Since this is quite difficult to do without removing the entire assembly, it has added protection against car thieves "hot-wiring" the ignition switch.

*continued*





The new body has an important innovation in the luggage compartment. By moving the gas tank forward, Chevrolet was able to use the space for bonus available trunk room. The deep well depression can take many suitcases straight up and will increase the trunk's usefulness as well as its capacity. It is undoubtedly the best storage area on any car in Chevrolet's class.

Moving the gas tank forward has at least one not-so-obvious advantage. There is now far less "wetable" area, which means that when the tank is low on gas it will be possible to squeeze more miles out of the last gallon since there will be less surface for it to cover. The vent on the gas tank has also been relocated. It now comes directly out of the filler tube and during the test there was no tendency to pop the last pint of gas out when the tank was being filled.

While MOTOR TREND's two test Impalas are representative of most of Chevrolet's overall characteristics, they in no way indicate the hundreds of combinations available with Chevrolet's numerous options. There are seven V-8 engines, five transmissions and four axle ratios listed as regular production options. Besides these, there are dozens of limited-production options that can be obtained on special order.



*The seating arrangement, particularly for rear passengers, is much better in those models with the squarer roofline. Visibility is also better by comparison.*

*Seating in the plush Impala was judged by some to be too soft for maximum comfort. In the overall picture the quality of interior is highest in the field.*

The engines are offered in two displacements, 283 and 348 cubic inches. For economy the best choices are the 170-horsepower version of the 283, and the 250 horsepower version of the 348, depending, of course, upon selection of the rest of the power train.

For moderate performance the 230-horsepower modification of the 283 and the 250-horsepower V-8 are rated almost equivalent. If transmissions and axle ratios are identical, the slight edge in performance goes to the 250-hp and an even slighter edge in economy to the 230-hp.

For the driver who prefers performance to economy, the triple two-barrel carburetor variation of the 348 will produce 280 horsepower. Another modification of this engine with four-barrel carburetion turns out 305 horsepower. These are Chevrolet's highest performance engines available with automatic transmissions.

Those who are out-and-out power enthusiasts should consider the special camshaft versions of the 348. One has a single four-barrel carburetor and the other, triple two-barrel carburetors. The first is rated at 340 horsepower and the second at 350.

Of course, any engine in Chevrolet's line is available with several transmissions — the selection can make a big difference in overall power or economy. There are five choices, although not all are available with each engine. They are: three-speed manual, three-speed with overdrive, and four-speed manual; a two-speed automatic, the Powerglide; and a three-speed automatic, the Turboglide. For economy the best choices in order of preference are overdrive, three-speed manual, four-speed manual, Powerglide, and Turboglide. The difference between the three- and four-speed manuals is small, as is the difference between the two automatics. For performance the three-speed manual would be a good choice with a low-rpm engine and an edge going to the four-speed on engines that produce maximum power at higher rpm's. Powerglide should be rated above the Turboglide for performance.

As regular production options Chevrolet offers four axle ratios: 3.08, 3.36, 3.55 and 3.70. These ratios vary according to the engine and transmission selected. Generally speaking, for most normal drivers the factory selections seem to be the logical choice. There is nothing in the rule book, however, that says axle ratios cannot be chosen according to the owner's preference and need. For example, those who live in mountainous areas and need power daily with only occasional high-speed trips might be wise to pick a higher numerical ratio for their cars. It would probably not be advisable, however, to select a lower numerical ratio unless the greatest proportion of driving was done on flat, level highways.

For the out-and-out performance enthusiast, limited-production options are available. Two of these are axle ratios intended for the Corvette, a 4.11 and a 4.56. Either gearset combined with a manual shift and one of the biggest engines should shave nearly three seconds off the acceleration times recorded for MOTOR TREND's 348-cubic-inch test car.

And, finally, Chevrolet has a big selection of other options that can make a car "just right" for special driving conditions: limited-slip differential, beefier suspensions, heavy-duty clutch, and bigger brakes for the man in the mountains or the acceleration enthusiast — to name only a few. All in all, Chevrolet's option picture is undoubtedly the best in its size and price class.

One word about options, though. Early in the model year the dealers are stuck with many cars with standard options, and the factory production lines are tied up building the most popular versions. But the individual who has the patience to wait, or the fortitude to demand that his car be equipped as he wants, can literally have his car made to order.

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# M MOTOR TREND



## Test Car

**TEST CAR:** Chevrolet Impala  
**BODY TYPE:** 4-door hardtop  
**BASE PRICE:** \$2769

**TEST CAR:** Chevrolet Impala  
**BODY TYPE:** 2-door hardtop  
**BASE PRICE:** \$2704

## Maneuverability Factors

**OVERALL LENGTH:** 209.3 inches  
**OVERALL WIDTH:** 78.4 inches  
**OVERALL HEIGHT:** 55.5 inches  
**WHEELBASE:** 119 inches  
**TREAD, FRONT/REAR:** 60.3 and 59.3 inches  
**TEST WEIGHT:** 3680 lbs.  
**WEIGHT DISTRIBUTION:** 51 per cent on front wheels  
**STEERING:** 5.2 turns lock-to-lock  
**TURNING CIRCLE:** 40.8 feet curb-to-curb  
**GROUND CLEARANCE:** 6 inches

**OVERALL LENGTH:** 209.3 inches  
**OVERALL WIDTH:** 78.4 inches  
**OVERALL HEIGHT:** 55.5 inches  
**WHEELBASE:** 119 inches  
**TREAD, FRONT/REAR:** 60.3 and 59.3 inches  
**TEST WEIGHT:** 3640 lbs.  
**WEIGHT DISTRIBUTION:** 51.8 per cent on front wheels  
**STEERING:** 5.2 turns lock-to-lock  
**TURNING CIRCLE:** 40.8 feet curb-to-curb  
**GROUND CLEARANCE:** 6 inches

## Interior Room

**SEATING CAPACITY:** Six  
**FRONT SEAT**  
**HEADROOM:** 34.5 inches  
**WIDTH:** 63.5 inches  
**LEGROOM:** 45 inches  
**TRUNK CAPACITY:** 29.7 cubic feet

**SEATING CAPACITY:** Six  
**FRONT SEAT**  
**HEADROOM:** 34.5 inches  
**WIDTH:** 63.5 inches  
**LEGROOM:** 45 inches  
**TRUNK CAPACITY:** 29.7 cubic feet

## Engine and Drive Train

**TYPE:** Ohv V-8  
**DISPLACEMENT:** 348 cubic inches  
**BORE & STROKE:** 4.125 x 3.25  
**COMPRESSION RATIO:** 9.5-to-1  
**CARBURETION:** Single 4-barrel  
**HORSEPOWER:** 250 @ 4400 rpm  
**TORQUE:** 355 lbs.-ft. @ 2800 rpm  
**TRANSMISSION:** Three-speed automatic  
**REAR AXLE RATIO:** 3.08

**TYPE:** Ohv V-8  
**DISPLACEMENT:** 283 cubic inches  
**BORE & STROKE:** 3.875 x 3.00  
**COMPRESSION RATIO:** 8.5-to-1  
**CARBURETION:** Single 2-barrel  
**HORSEPOWER:** 170 @ 4200 rpm  
**TORQUE:** 275 lbs.-ft. @ 2200 rpm  
**TRANSMISSION:** Two-speed automatic  
**REAR AXLE RATIO:** 3.08

## Performance

**GAS MILEAGE:** 10 to 14 miles per gallon  
**ACCELERATION:** 0-30 mph in 3.8 seconds, 0-45 mph in 6.8 seconds and 0-60 mph in 10.3 seconds  
**SPEEDOMETER ERROR:** Indicated 30, 45 and 60 mph are actual 29.5, 43.5 and 58.5 mph respectively  
**ODOMETER ERROR:** Indicated 100 miles is actual 100 miles  
**WEIGHT-POWER RATIO:** 14.7 lbs. per horsepower  
**HORSEPOWER PER CUBIC INCH:** .718

**GAS MILEAGE:** 13 to 17 miles per gallon  
**ACCELERATION:** 0-30 mph in 4.6 seconds, 0-45 mph in 7.1 seconds and 0-60 mph in 12.2 seconds  
**SPEEDOMETER ERROR:** Indicated 30, 45 and 60 mph are actual 30, 44.5 and 59.5 mph respectively  
**ODOMETER ERROR:** Indicated 100 miles is actual 102 miles  
**WEIGHT-POWER RATIO:** 21.4 lbs. per horsepower  
**HORSEPOWER PER CUBIC INCH:** .600



## Full Range ROAD TEST

the low-price Dodge has a personality built a



# THE DART

V-8's

**F**OR ALL-OUT PERFORMANCE, the 1961 car buyer has to look no further than Dodge's newest Dart with its optional powerplant, the brutal D-500 ram-induction engine. It is inconceivable that anyone who intends to use his automobile on the street would desire—or could handle—more neck-snapping acceleration and higher usable speeds than are provided by this combination.

Of course, not everyone wants a car that will turn a blistering 16 seconds in the standing quarter-mile. Dodge builds another V-8 that can deliver within a whisker of 20 mpg on regular fuel, while still affording reasonably good performance for all normal driving conditions. And, in between, there are three other Dart V-8's for those who want a compromise between performance and economy.

For this report, MOTOR TREND tested the two engines at either end of Dodge's V-8 spectrum. Both were fitted to hardtops in the Dart's top-of-the-line Phoenix series. Incidentally, omitting the slant Six was deliberate. This unusual economy unit is a story in itself that will be told at a later date.

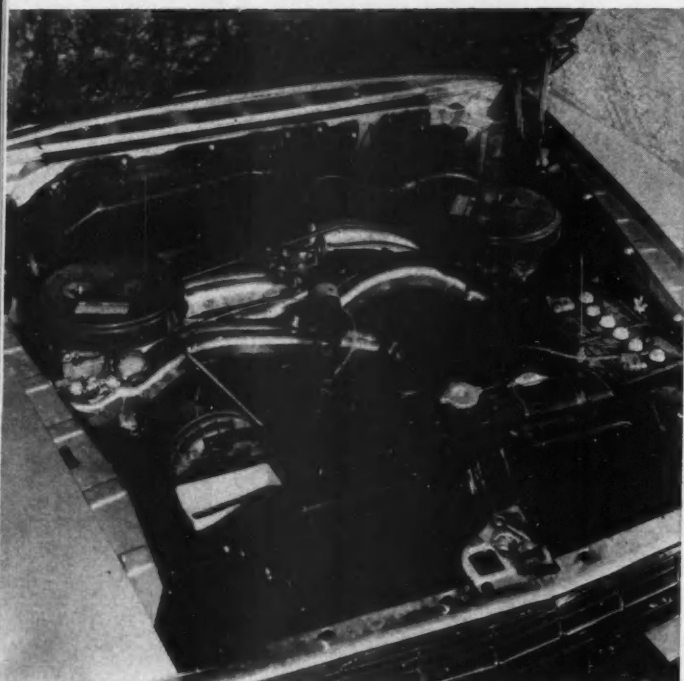
Both powerplants are also available in the least expensive Seneca series and in the mid-line Pioneer. These designations refer to the 23 available body styles and trim variations; beneath the unitized skin they are all fundamentally the same in their engineering features—118-inch wheelbase, longitudinal torsion-bar front suspension, semi-elliptic springs at the rear, all sturdy and rugged throughout.

Strangely enough, nowhere in or on the car does it say "Dart." Only the series name distinguishes it nominally from the standard Dodge Polara.

The ram-inducted test car was a four-door hardtop. As mentioned, it was all *go*. But endowing a car with race-car-like performance confers an added responsibility upon the manufacturer—the obligation to build in better-than-average roadholding and stopping. The Dart D-500 is certainly acceptable on both counts. Generally, though, it would be better to install

*continued*

around big power



*The Dart's ram manifolding is not only impressive to look at, it's fun to drive. With all that power plus a throaty roar, you and the people you pass are sure that this is one of '61's hot cars.*

stiffer suspension as a matter of course with the ram engine. Cornering ability, while very good and on a par with other Chrysler products, is not really up to the performance potential of the car as a whole. This only means that the owner is faced with a borderline case, a good handling car that is not really a serious problem but which could be improved with some after-purchase modifications.

Special police brakes were fitted to this particular car, a wise option. Something that can go as fast as the D-500 should be able to stop quickly, too. The drums are a healthy 12 x 2.5 inches containing 251 square inches of lining area, compared with 11 x 2 inches and 184 square inches for the standard type. Under actual test, a couple of moderately hard stops were made from 100 mph during acceleration runs at the Long Beach, California, drag strip. There was a suggestion of fade but certainly not as much as is usually expected from the average Detroit sedan. What all this adds up to is more-than-adequate holding power for normal use, along with sufficient reserve for one-shot emergency conditions.

Though power-assisted, the special brakes did require somewhat more pedal pressure than the normal variety. This gave them a feel similar to that of the stiffer accelerator now used with the hot D-500 engine, an advantage in an extremely powerful car. The 1960 equivalent had pedals that responded to a very light touch, causing the car to have an unnerving "hair trigger" feel.

Full-throttle starts produce a noticeable characteristic when the car is equipped as this one was — Torqueflite three-speed automatic transmission and Power-Lok limited-slip differential. The tires emit a brief, satisfying chirp coming off the line and as the Dart accelerates there is a sudden solid shifting which leaves additional rubber at each shift point. This fact alone drives home the point that the Dart D-500 is not the sort of machine in which Aunt Minnie would do her marketing.

The acceleration figures in the data box, highlighted by an

incredible 0-60 time of 6.8 seconds, tell only part of the D-500's story. Moving up the scale, the car reached 70 mph in 9.1 seconds, 80 mph in 11.9 seconds and speed at the end of the 16-second quarter-mile was a strong 94 mph. Very few absolute stockers can even approach those speeds and, most remarkably, the test Dart had not yet clocked its first thousand miles. Of interest is the fact that the two-way acceleration runs were made under head and tail wind conditions averaging 10 mph with no appreciable difference in the figures. It proves that one cannot beat the mighty horses that come from lots of cubic inches.

The cause of it all is the 383-cubic-inch V-8, fed by two four-barrel carburetors at the ends of lengthy ram-tuned intake manifolds. The engine is virtually untouched from last year, still developing its 330-hp at 4800 rpm and a tremendous 460 lbs.-ft. of torque at 2800 revs. One item of design could have been changed to please service managers; the spark plugs present a most interesting problem when it is necessary to change them. They are so inaccessible under the ram tubes that the home mechanic will save himself considerable frustration by leaving them to professional care.

A great deal has been written about this engine in the past year or so, therefore only a few salient points need be mentioned here. It is no secret that the 10-to-1 compression ratio thrives on premium fuel — and rather large amounts of it at that. Highway economy, maintaining a legal maximum of 65 mph, slowing for traffic through town, worked out to 13.1 mpg; pure stop-and-go city driving will drop from there.

While the ram tuning does help deliver a terrific initial and mid-range acceleration rate, it has a tendency to create a false impression of overall performance. At terminal speeds, when the engine is revving quite high, the acceleration flattens out because the ram tuning is slightly out of phase with the top speed of the engine. There was an interesting tendency for the engine to bounce when crossing train tracks; a slight bump was actually felt in throttle pedal vibration. It was evidently caused by the spring that is used in the rear engine mount having a resonant rate that is sympathetic with the bounce and rebound induced by the shock of the tracks. Of course, other than knowing it takes place, one need not be concerned because it can cause no damage whatsoever.

While the test car had Torqueflite, the standard transmission with the D-500 engine is a new heavy-duty three-speed manual gearbox. With synchromesh in second and third, its ratios are 2.55 in low and 1.49 in second. It is doubtful that the manual shift offers much advantage except to drag enthusiasts because the automatic changes gears very rapidly indeed. The only rear axle ratio with the D-500 is 3.23, regardless of transmission. A big help, incidentally, is the Power-Lok limited-slip differential, which equalizes pulling power on mud, snow, sand and, yes, the drag strip.

The other car, also a Phoenix but with a two-door hardtop body, was equipped with the standard V-8, the unit a Dart buyer gets when he just says he wants an Eight. Again, the transmission was Torqueflite but the performance characteristics were entirely different.

First-rate economy was emphasized this time, along with the smoother, quieter operation that goes with milder tuning. Under mixed city and highway conditions, the car was good for an

average of 16.9 mpg. Even with the most abusive treatment, including the fuel-consuming acceleration tests, it never delivered less than 15.4 mpg.

As one would expect, the engine had a lower noise level than the D-500 and, because the shift points were set to take place at a lower rpm, the gears changed much less obtrusively. Rubber was left on the pavement only when the car was punched hard in first gear from a dead stop. With lighter throttle and brake pressures, the overall driving feel was effortless.

Yet performance was quite respectable for a modest V-8. A 0-60 time of 11.5 seconds was clocked, a figure that not too many years ago would have been definitely considered in the hot class. Quarter-mile times were not in keeping with this car's sedate purpose, so they were not recorded.

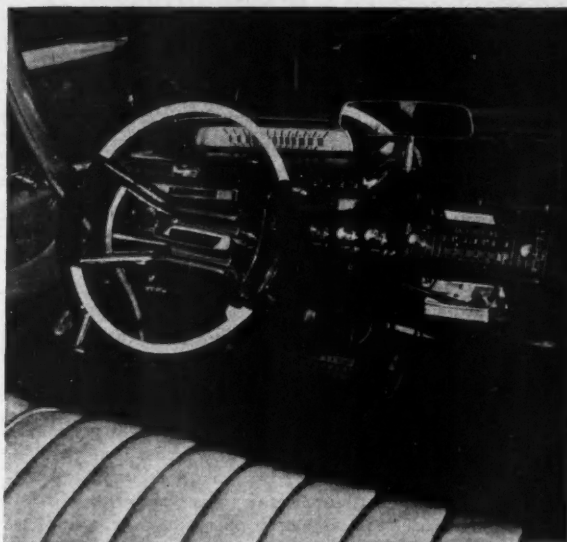
During the performance tests of the milder car, the value of the D-500's police brakes became apparent. Four not-too-abrupt stops from 60 mph caused the second Dart's standard drums to fade noticeably. However, they did prove quite adequate for normal driving.

The normal V-8 engine displaces 318 cubic inches and develops 230 hp at 4400 rpm. Its torque output is 340 lbs.-ft. at 2400 rpm. Carburetion is a single two-barrel and the compression ratio is a conservative 9-to-1 to allow the use of regular fuel. This is high enough, though, to require a good quality regular.

In addition to Torqueflite, this unit has a gearing option all its own in the Dodge line, the Powerflite two-speed automatic. Though older in design and somewhat less efficient than the three-speed unit, Powerflite has the virtues of low initial cost, simplicity and well-proven reliability.

The standard transmission, however, is a light-weight three-speed manual. Like the D-500's stick shift, it is a fresh piece of engineering this year. The same basic unit featured in the Dart Six and the compact Lancer, it has a 2.12 first gear and 1.43 second when combined with the V-8.

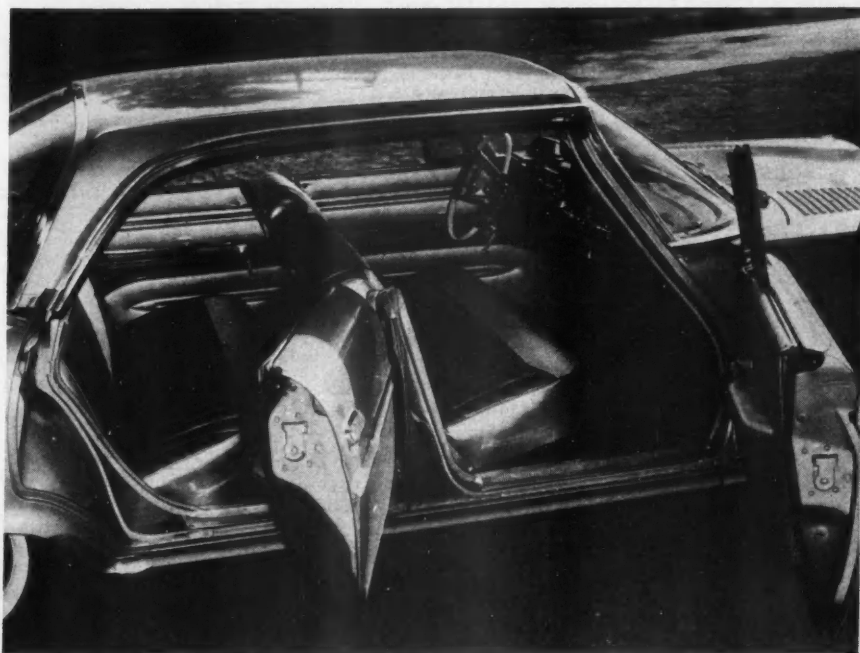
Axle ratios are 2.93 or the test car's 3.31 with the Torqueflite automatic, 3.31 with Powerflite and 3.58 with the manual gearbox.



*Styling of the instrument cluster certainly cannot be classified as subdued. One helpful change as the result of the 1961 facelift is the abandonment of the old barometer-type speedometer. The new, more conventional unit is much easier to decipher.*

An important innovation shared by all 1961 Dodge engines is the alternator. Replacing the conventional DC generator, it is a three-phase, alternating current generator which is capable of delivering up to 10 amps of electricity to the battery while the engine is idling. The regular DC method provides no output at idle. Obvious advantages include longer battery life and easier starting, especially in cold weather.

*continued*



*Similar to the bold exterior styling, the interior treatment is geared for definite tastes. But, no matter what one likes in color and fabrics, he will be comfortable in the big seats.*



Dodge steering, which has always been good, gets a two-way design advance this year through the use of a fabric-reinforced rubber universal joint coupling the steering shaft to the steering gear box. It not only helps insulate road vibration from the driver's hands but it makes the car easier to assemble since the steering column can be installed in the body before the sub-frame and engine assembly are attached. Also, it will compensate for misalignments that might cause binding or time-consuming adjustments during manufacture.

Evaluating riding qualities can be a tricky business — sort of like trying to buy a suitable necktie for a finicky relative one has never met. The test method, having a series of drivers and passengers with varying tastes voice their opinions, seems to work out well. The consensus is that the Dart provides an eminently comfortable ride; reasonably firm yet soft enough to soak up rough terrain. Seating is particularly good. The forward edge of the front cushion is 11.4 inches from the floor which is an ideal height. There has been no skimping in leg- or kneeroom so that long distances can be covered with relatively little fatigue. Headroom is ample but gentlemen will please remove their hats; there is not *that* much headroom.

Some passing mention may be made of the high seat back for the driver. Exclusive to Chrysler Corporation cars, this feature is more than a sales gimmick for the motorist who is going to spend long hours behind the wheel. The comfort level is noticeably higher. One seating feature that has passed away with little sorrowing on the part of buyers is the once-heralded swivel seat. They just weren't worth all the trouble.

No particular effort has been made to call the shots on exterior and interior styling. The customer will either like it or he won't. However, as style relates to function, some comments are appropriate. The body shell has been reshaped in a manner that should provide greater rigidity to the overall structure. Fore-and-aft visibility is of the highest order. Placement of transmission

and heater buttons is conveniently at hand. The speedometer is in clear view but the auxiliary instruments are recessed and somewhat hidden in the lower part of the panel. They require a bit of practice to identify without squinting. In addition to fuel and temperature gauges, an ammeter has been included this year, apparently to show the new Dart owner the good low-rpm charging characteristics of the alternator. Oil pressure is still registered by a warning light.

Of the three other Dart V-8 options, two are variations of the engines already discussed while the third falls between them in both size and power.

Remove the ram manifolding from the D-500, install in its place a normal intake system with a single four-barrel carburetor and presto! — the Police Special, 325 hp at 4600 rpm and 425 lbs.-ft. of torque at 2800 rpm. It is catalogued and, in theory, available, but will probably be one of those options that requires some influential persuasion to obtain. Dodge reports that at least 27 states find this engine in a Seneca series sedan body a suitable highway patrol car. The rear axle offered with it is the same 3.23 as the D-500's so performance should not be too markedly different. Because the mixture trickles through a conventional manifold and one less carburetor, mid-range economy will most likely improve.

A mild performance option for those who want a shade more punch than the standard V-8's without sacrificing too much economy is the 318-cubic-inch unit with power pack. Externally, this simply means the substitution of a four-barrel carburetor for the normal two-throat. While compression remains unchanged at 9-to-1, the factory claims a full 30 horses more — 260 hp at 4400 rpm. Torque is upped to 345 lbs.-ft. at 2800 rpm. This engine's particular advantage is a bit more of an edge for those crucial passing situations while still yielding mileage at cruising speeds close to that of the regular unit. The only transmission available this time is Torqueflite but there is the same choice in axle ratios between 2.93 and 3.31 as with the normal V-8/Torqueflite combination.

Finally, the Dart is also offered with a middle-sized engine, a 361-cubic-incher with a single four-barrel carburetor. Also called a D-500, this one has the advantage of a 9-to-1 compression ratio for regular fuel operation while delivering 305 hp at 4800 rpm and 395 lbs.-ft. at 3000 rpm. This is the powerplant that was available with ram tubes last year and, with a single two-barrel to develop 265 horses, is currently the standard Dodge Polara V-8.

Here again, the transmission choice is between Torqueflite or the heavy-duty manual. Axle ratios are set forth with no apparent choice as 3.23 with the stick gearbox and 2.93 with the automatic. Either package will provide plenty of performance yet proportionately better gasoline mileage than the big ram mill. And not to be discounted are the savings possible with cheaper gas.

With this broad group of selections, the prospective Dart buyer has quite a choice. He must bear in mind, however, that he cannot get something for nothing. In other words, drag-strip performance and 18-19 mpg economy are not going to come in the same package; the two are simply not compatible in a full-sized, six-passenger automobile. The customer has to decide between them.

By now, the concluding opinions on the Dart should be apparent. Dropping that big ram engine into the low-priced Dodge creates a machine that will get from A to B as quickly, safely and comfortably as the law and highway conditions will allow. But sticking with the perfectly standard Dart V-8 will keep the fuel bills within reason, yet still provide the normal driver with adequate highway performance. Judicious selection of either of these engines or the three between them will provide the proper car for almost any kind of motoring. /MT



Access to the Dart's big trunk is fairly easy. Although the spare, by being located in the immediate frontal area, is handy, it does cut down on usable space.

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## MOTOR TREND



### Test Car

**TEST CAR:** Dart Phoenix  
**BODY TYPE:** 4-door hardtop  
**BASE PRICE:** \$2796 (add \$312.60 for ram induction)

**TEST CAR:** Dodge Dart Phoenix  
**BODY TYPE:** 2-door hardtop  
**BASE PRICE:** \$2796

### Maneuverability Factors

**OVERALL LENGTH:** 209.4 inches  
**OVERALL WIDTH:** 78.7 inches  
**OVERALL HEIGHT:** 54.8 inches  
**WHEELBASE:** 118 inches  
**TREAD, FRONT/REAR:** 61.0 and 59.6 inches  
**TEST WEIGHT:** 4005 lbs.  
**WEIGHT DISTRIBUTION:** 55 per cent on front wheels  
**STEERING:** 3.5 turns lock-to-lock  
**TURNING CIRCLE:** 42.3 feet curb-to-curb  
**GROUND CLEARANCE:** 5.0 inches\*

**OVERALL LENGTH:** 209.4 inches  
**OVERALL WIDTH:** 78.7 inches  
**OVERALL HEIGHT:** 54.8 inches  
**WHEELBASE:** 118 inches  
**TREAD, FRONT/REAR:** 61.5 and 60.2 inches  
**TEST WEIGHT:** 3915 lbs.  
**WEIGHT DISTRIBUTION:** 55 per cent on front wheels  
**STEERING:** 3.5 turns lock-to-lock  
**TURNING CIRCLE:** 42.4 feet curb-to-curb  
**GROUND CLEARANCE:** 5.1 inches

### Interior Room

**SEATING CAPACITY:** Six  
**FRONT SEAT**  
**HEADROOM:** 37.6 inches  
**WIDTH:** 63.8 inches  
**LEGROOM:** 45.1 inches  
**TRUNK CAPACITY:** 31.6 cubic feet

**SEATING CAPACITY:** Six  
**FRONT SEAT**  
**HEADROOM:** 33.5 inches  
**WIDTH:** 63.8 inches  
**LEGROOM:** 45.1 inches  
**TRUNK CAPACITY:** 17.8 cubic feet

### Engine and Drive Train

**TYPE:** Ohv V-8  
**DISPLACEMENT:** 383 cubic inches  
**BORE & STROKE:** 4.25 x 3.38  
**COMPRESSION RATIO:** 10-to-1  
**CARBURETION:** Dual 4-barrel with ram manifold  
**HORSEPOWER:** 330 @ 4800 rpm  
**TORQUE:** 460 lbs.-ft. @ 2800 rpm  
**TRANSMISSION:** Three-speed automatic  
**REAR AXLE RATIO:** 3.31

**TYPE:** Ohv V-8  
**DISPLACEMENT:** 318 cubic inches  
**BORE & STROKE:** 3.91 x 3.31  
**COMPRESSION RATIO:** 9-to-1  
**CARBURETION:** Single 2-barrel  
**HORSEPOWER:** 230 @ 4400 rpm  
**TORQUE:** 340 @ 2400 rpm  
**TRANSMISSION:** Three-speed automatic  
**REAR AXLE RATIO:** 2.93

### Performance

**GAS MILEAGE:** 11 to 15 miles per gallon  
**ACCELERATION:** 0-30 mph in 2.5 seconds, 0-45 mph in 4.1 seconds and 0-60 mph in 6.8 seconds  
**SPEEDOMETER ERROR:** Indicated 30, 45 and 60 mph are actual 30, 43 and 57 mph respectively  
**ODOMETER ERROR:** Indicated 100 mph is actual 95 miles  
**WEIGHT-POWER RATIO:** 12.14 lbs. per horsepower  
**HORSEPOWER PER CUBIC INCH:** .86

**GAS MILEAGE:** 15 to 19 miles per gallon  
**ACCELERATION:** 0-30 mph in 4.0 seconds, 0-45 mph in 6.9 seconds and 0-60 mph in 11.5 seconds  
**SPEEDOMETER ERROR:** Indicated 30, 45 and 60 mph are actual 29, 43 and 54.5 mph respectively  
**ODOMETER ERROR:** Indicated 100 miles is actual 98 miles  
**POWER-WEIGHT RATIO:** 17 lbs. per horsepower  
**HORSEPOWER PER CUBIC INCH:** .69

WHAT'S

**RIGHT**

AND

**WRONG**

WITH THE '61 CARS

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# Honest opinions of the new cars by MOTOR TREND'S staff and contributors

**A**PPRAISING NEW CARS is an all-year assignment for the staff of MOTOR TREND. The road tests that appear on these pages each month represent the collective appraisals of our editors and some of the nation's leading automotive journalists. But rarely do these individuals have the opportunity to set down their own frank opinions of a collective crop of new cars.

The 1961 car season, with its many new concepts of automotive design, seems to be a subject well suited for overall discussion by the men of MT. On these next few pages you will read their completely uncensored and uninhibited reactions to Detroit's latest productions. Each of the commentaries was written independently

and, for this reason, repetitive and conflicting viewpoints do appear. But the overall impression that the reader will gain by reading all of the opinions should be a good summary of the virtues and vices of the 1961 car.

Some may say that the staff of MOTOR TREND certainly does not represent a good cross-section of the average car buyer. Granted, this is a group which spends a great deal more time with cars and the men who make them, but by virtue of training and experience they are always evaluating cars in the eyes of the readers, the auto consumers and enthusiasts. For this reason the following comments should be of interest and value to anyone with an interest in cars.

**"...In getting out of one rut, Detroit is simply getting into another."**

*Don Werner*

**N**EARLY EVERYONE by now has been thoroughly conditioned by Detroit into expecting major changes in cars from one year to the next. Yet even the most sophisticated car buyer has been startled by 1961 as a year particularly unusual for both the number and the extent of changes. It is this aspect that seems to characterize as much as any other the current model year.

But changes often are more apparent than real—or change merely for the sake of change, as they say—and so it is necessary to look closely and critically at the 1961 cars in order to separate worthwhile developments from items of doubtful value.

It would appear that Detroit has made a genuine effort to put new ideas in cars on the road. And so it has—in some specific cases. Yet, at the risk of seeming ungrateful, I would say that for all the things there are to praise, there are as many things to deplore. If a complete list of the "rights" and "wrongs" were to be attempted here, it would go on endlessly and probably too tediously. Instead, it is better to be brief and deal only with the most topical developments by categories.

For instance:

**Car size** is getting the big play in 1961, more than any other single trend in design. In the recent past the popular length in cars ran about 210 inches overall and up, with relatively few exceptions. Now there are the new compacts, mostly in the 180-to-190-inch range, or very close to it. Currently even many of the larger cars, which until a couple of years ago were adding inches annually, are desperately chopping off front and rear overhang.

Cars of sensible sizes obviously make good sense. Certainly they've been generally lacking until the compact became socially acceptable. A shorter car, if it is nothing else, is more maneuverable, weighs less, and should cost less from the standpoint of basic transportation.

*But*—I fear that Detroit in getting out of one rut is simply getting into another. Until recently it thought only "big." Now it thinks only "smaller." The premise that one smaller-size category is right for everyone is just as faulty as the make-them-all-bigger theory of the middle and late 1950's. The size of a car, I feel, is predetermined by its function and should never be universally standardized. We do need cars of 180 to 190 inches, but also cars of 170 inches and 220 inches, and so on. There

are no limits other than needs, whether they be physiological or psychological.

**More makes** of cars is another notable feature of the 1961 model year. And if we define a "make" as a car of sufficiently distinct design within a line—as the Corvair and the Corvette, say, differ from the standard Chevrolet—there appears to be an impressive increase in 1961. By this method of reckoning, the count now stands at 29, a healthy and welcome boost from six or eight years ago, when there were as few as 16 or 18 makes from which to choose.

*But*—how much of this is an illusion, a trick with mirrors? What difference is there in basic design between, for example, the Buick Special and the Oldsmobile F-85, the Lancer and the Valiant, the Comet and the Falcon, the Dart and the Plymouth, the Ford and the Mercury? Relatively little. In most cases, it does not exceed surface styling, with a few engineering variations here and there in the power train and chassis. Essentially each pair of names I have mentioned is one car design.

The fundamental fault, of course, is that there are in the U.S. only five firms manufacturing cars, and, of these, three are especially adept at manipulating components and creating new names in such a way as to lend the appearance of greater variety in cars than actually exists in terms of design. Chrysler Corporation makes only one compact car, not two; Ford Motor Company makes only one compact car, not two; General Motors makes two compact cars, not four. The same situation applies, although to a lesser extent, in the case of the standard-sized cars.

Detroit generally justifies the sharing of basic design and components between makes of cars on the grounds that the resulting volume of units enables lower cost of the resulting vehicles to the car buyer. That excuse is too thin to be acceptable, particularly when fortunes are spent on frivolous annual changes to give the packages the appearance of difference. That same money spent on separate designs to be retained would result in honest variety that could suit the objectives of both the car buyer and the car maker.

**Economy cars** is a term widely used as a synonym for compacts, although the two classes of vehicles are not necessarily the same. The majority of the compact cars are less expensive to buy

*continued*



and more economical to operate and maintain than standard-sized cars.

*But* — the fact of smaller size does not always guarantee genuine economy. This is particularly true in gas mileage which is the yardstick by which most drivers measure an economy car. Only two or three of the 1961 compact cars will deliver anything close to 30 mpg and are entitled to be called "economy" cars. The rest are capable of closer to 20 mpg, or less, and the line between these and some of the standard-sized cars is almost too fine to bother drawing.

**BETTER QUALITY** is a claim made annually, and so it is being made again in 1961. The car makers presumably are sincere in their desire to build vehicles with fewer assembly defects, improved basic materials and of even greater dependability. We know they use pilot production lines where problems of assembly are worked out in advance. Extraordinary systems of inspection have been devised. The latest achievements of science are utilized for materials. Mechanical components are subjected to intensive testing. Many of the car makers have switched to unit construction which, in a quality sense, does result in a tighter and more rattle-free body.

**"This year we should praise the car buying public for demanding better cars."**

*Dean Parker*

**I**T'S EASY TO PRAISE Detroit for some radical new engineering development or styling concept. Our auto industry leads the world in giving value for your dollar. But when we criticize, the designers can always say, "We only give the public what it wants."

So maybe this year we should praise the American car-buying public for "wanting" a more practical, economical, reasonable package for its family transportation. This is what Detroit is giving us. It started three years ago with the unexpected popularity of the Rambler (a basic car that AM could hardly give away five or six years ago). The trend was nailed down last year with the Falcon, Corvair and Valiant compacts from the Big Three. This year the new "medium compacts" from Buick, Olds, Pontiac and Dodge assure us that the era of insanity is at an end. The day when a family chose a car more for prestige than utility — and when value was a function of size, weight, horsepower and cost — is past. The day of the practical utility car, bought to do a job, is here. Detroit and the American public are to be praised.

We see evidence of the new era in many 1961 developments. Even our "big" cars are getting shorter and narrower and lighter. As recently as a year ago the car manufacturers were raving about increased width, length, more car for the money, etc. Today these same firms make a virtue of two or three inches less length and width than last year, 150 pounds less weight, the most compact dimensions in a given price class, etc.

Just the other day one company executive, who built one of the industry's biggest cars in 1960 and has reduced size substantially this year, said, "...they didn't need a package 20 feet long, seven feet wide and six feet tall." He said their new car "will be interpreted as a big car, but you won't have to build a garage around it." Detroit has rolled very nicely with this punch!

And the new trend is evidenced in more subtle ways. Note how Chrysler Corporation has reduced compression ratios across the board on standard engines to burn regular-grade gas. This

*But* — the quality of cars in general is going from bad to worse. The cheapness of materials, even in higher-priced cars that once had a reputation for quality and luxury, is discouraging. The most commonplace components, items that have been simple fixtures of cars for decades, often are the most defective. One of the strongest inhibitions car buyers have to making a new purchase is the prospect of the ordeal they must endure to get things "right."

In order to give this critique an upbeat ending, let me single out a few 1961 achievements which deserve specific mention.

Top of the list is General Motors' new lightweight V-8, developed by Buick and shared by the Buick Special, the Olds F-85 and the Pontiac Tempest.

Next, and not far behind, is the fantastically clever flexible driveshaft that needs no universal joints which couples the Tempest's transaxle with the engine. This is great engineering.

In the area of total vehicle design, my hat's off to Chevrolet for its new group of utility vehicles — the Greenbrier van-type bus, Rampside pickup and Lakewood station wagon, all of the Corvair line. These are the most badly needed developments of 1961.

may reduce miles per gallon fractionally, but they figure you'll end up with more miles per dollar. Five years ago car buyers swallowed premium gas as a necessary evil; today a salesman has to have a good reason for specifying it. This is good.

I think we might logically include the new trend to simplified automatic transmissions as part of the overall pattern, too. The new three-speed Hydramatic and Buick Special two-speed converter are marvels of simplicity compared to comparable earlier designs. These transmissions have fewer parts — gears, clutch elements, valves. Admittedly the big reason here is manufacturing cost, but if you've ever paid \$250 to have an automatic overhauled you'll appreciate the principle — fewer parts to go wrong, fewer parts to replace.

And this very new trend to simplified chassis maintenance procedures is only the beginning of something really big. Cadillac says no lubrication will be needed on their new chassis. Ford allows 30,000 miles between chassis lube jobs. Others have reduced the number of lubrications points to only four or five. It all means less cost and attention from the driver and is fully in keeping with the trend to simplified transportation. The no-lube chassis should be an industry standard in four or five years.

Up to now I've been praising trends. Now I want to mention some specific developments that are bound to start some trends. The most significant car in the whole 1961 model crop, without a doubt, is the new Pontiac Tempest. Put the optional Buick aluminum V-8 in the front and you've got a prototype of the American family car of 1965 — or maybe even 1970.

Take a good look. The transaxle at the rear (with front-mounted engine) is definitely the coming thing. And who can think of a neater way to drive it from the front engine than that fantastic bowed, flexible torsion driveshaft? I don't know just what the patent situation is on this deal; but at this point there just doesn't seem to be any other logical way to drive a transaxle.

GM in general, and Pontiac engineers in particular, are to be congratulated all over the place for daring to be different.

Chevrolet carried the ball last year with the radical Corvair, and was dismayed to see sales drop well below the more conventional Falcon. I don't say it couldn't happen with the Tempest. But I also think advanced engineering will eventually "out," so to speak. Corvair and Tempest will get their just share of the market yet.

Undoubtedly the most significant new engine this year is the small Buick-Olds aluminum V-8. I feel certain this is a near-prototype of the typical 1965 American passenger-car engine. This is not only because of the light aluminum construction, but features like the cast crankshaft, water-heated intake manifold, diagonal accessory shaft ahead of the timing chain, etc., should start trends.

In one way, though, I think American Motors' new aluminum block is more significant than the GM design — and that is in the casting method. AM has gone whole-hog in its tooling to take full advantage of aluminum construction by putting in precision high-pressure die-casting equipment. It's expensive — but I think this is the way most aluminum engines will eventually be cast. GM is playing it cool with the compromise "semi-permanent-mold" technique. Hats off to little American Motors for pioneering on this one!

Criticisms? It's pretty hard to be too critical of Detroit in a year when they bring out transaxles, aluminum V-8 engines, die-cast blocks, torsion driveshafts, improved transmissions and suspensions. This industry is *moving* — don't let anybody kid you on that. Designers who are trying so many things so fast are bound to make mistakes.

As usual, my pet gripe is body styling. As far as I can see, the only bright spots in this field this year are the Tempest and the new Dodge line. The Tempest frontal and side treatments are fresh, and the 15-inch tires do something for the car that hasn't been done for an American car in years. I like

the simplicity and sweeping lines of the new Dodge — but maybe I'm partly impressed by the terrific improvement over last year! On the other cars (or most of them) it often seems that the stylist is trying too hard to be different — that is, it seems that he would rather have a *different-looking* body than a *good-looking* body. Look at the new Lincoln-Thunderbird styling. Different — but good? Look at the new Ford. I considered the '60 body good-looking, but it didn't sell — so they had to have something entirely different for '61. They've got it — and it'll probably sell! The new Olds and Chevy are particularly weak examples in the GM camp. What bothers me is the brilliant engineering that goes into these bodies to get chair-height seats with low overall height, low tunnel height, stiffness, silence, more glass area — and then the stylists wrap it all up in packages like this. As far as I can see, the *compacts* are the real standard-bearers in the styling field these days. As a group, they look a lot better than their big brothers.

And just one more criticism: The trend to lower and lower axle gear ratios continues — and I can't see any future in it. Admittedly, this is an effective way to reduce noise and vibration and improve gas mileage on the highway, but it also clobbers your acceleration, especially at low speeds around town. At the same time the low gear ratio does practically nothing for economy around town. Since the great bulk of driving on the average American car is in low-speed city driving, the implication is obvious: We're sacrificing acceleration in maybe 80 per cent of our driving to get a couple more miles per gallon in 20 per cent of it! I can't see it... but the trend continues.

But, all in all, I think there's more meat in Detroit's 1961 model crop for the man who likes practical, efficient city and highway transportation than at any time in the last 25 years. A good job well done.

**"There's not a bad car in the lot...neither is there a great one."**

*Jim Miller*

**T**HERE ARE some 29 new cars available in 1961. They are all good cars. There is not a single one about which an honest critic could in right conscience say, "Don't buy it, it's a lemon." But, in equal honesty, there is not a single one that the critic can point to as great—a one outstanding car in performance, design, utility.

The reason why Detroit is producing good but not great cars contains both the right and wrong factors of the 1961 automobile. What's wrong is a universal sameness that borders upon mediocrity. What's right is the fact that this very sameness and the emergence of so many new nameplates is a sign that the highly competitive auto field is in a state of flux; that it is in an evolution, on its way to producing a new and better type of product.

With few exceptions there isn't an automobile dealer today (no matter what brand of cars he deals in) who can't supply the potential customer with anything from an economy to a luxury vehicle. Each has a compact, a low-price car and a deluxe vehicle to choose from. From the standpoint of many dealers this is a condition that they have long desired. No prospect can walk out of the showroom because there isn't the type of car there that he wants. But from the viewpoint of the consumer it is only confusing. Not only are there new names in the marketplace, many of the older names now signify vehicles with rapidly changing personalities. Some low-price cars are shrinking to compact size; some compacts will outperform most anything on

the road; some medium-price cars call for little more overall expense than those below them.

Thus the big emphasis of 1961 has been upon more refinements for the compacts and greater simplification of the standard-size cars. This can only mean one thing: all of these cars are headed in the same direction. In a very few years a new type of car will evolve from this hot competition. Let's hope that in this battle for survival the victorious cars will emerge *without* excess bulk and ornate trim, *with* the hot but compact powerplants that some of today's new smaller cars are pioneering. When this car evolves Detroit and its critics will have a product that they can point to and call great.

Obviously some of today's car makers are going to lose in the battle to produce the best new car of tomorrow that we have described above. Does this mean that they will have to bow out of the picture? No, it means that they will have to go off in other directions. They will be forced to build cars of a different type, specialized vehicles aimed at drivers with particular needs and desires.

This trend can already be seen in a few 1961 developments. The Corvair's new sports wagons and rampside pickups, Ford's miniature Econoline trucks are cases in point. These particular vehicles aren't significant in just their new form of utility. They are important because they prove that Detroit is ready to abandon conventional shapes and sizes to make cars for a new audience. They can mean the start of a new wave of automobiles

that range from sports-type go-to-work cars to family campers.

There is one more area in which this hoped-for trend to specialization has planted its germs in 1961. Quite surprisingly we see this new life in the staid field of the luxury car. In the past each of the Big Three has tried to outdo the others in producing a super-luxury limousine that varied little in concept from the very successful Cadillac. This year the Caddy's competition is showing more individual courage. The Lincoln Continental is not a floating fortress but a cleaner and more unified

package with a distinct design personality. The Imperial isn't being too brave but it is putting its toe into the water of a new school of classic design. The Thunderbird must now be counted in this area and it too has come up with a new face that certainly will make it the most controversial car of the year.

All in all 1961 is a year in which an unprecedented number of unveilings has left us with an initial feeling of disappointment at the lack of distinction but there is real hope for the future in a general trend to abandon old concepts.

## "...the cars are built better but their average life is decreasing."

Bob Ames

**W**HILE THERE ARE a good many advancements in overall automobile development this year, it is mainly a year of refining and honing present components. In my own personal opinion, the most significant and far-reaching breakthrough in engineering is the development of the aluminum engine.

This is aluminum's initial year as the major material in engines, and there are bound to be disappointing, conflicting and even superlative results. But one fact will become more important as the years roll by. Engines that weigh less can be powerful, cost less to operate — and result in dramatic changes in ride, handling and comfort in either big or small cars.

I won't deny that Pontiac's overall concept in developing its Tempest is commendable. Going even further, it could be called outstanding — which the car most certainly is. But how new is the engineering? The four-cylinder powerplant was developed from the V-8 and uses much of its original tooling and molds. The transaxle was developed for Corvair. The single really new component is the curved driveshaft. To be honest in evaluating the car, it must be said that it shows ingenuity but not true engineering genius.

Pontiac's contribution to engineering development this year will be more in the introduction to the public of the transaxle than anything else. If the Tempest is successful there is no doubt that all front-engine cars will soon have to adopt a transaxle to survive in competition.

This brings me back to the word "concept." And for introducing the idea of moving the transmission a few feet from where it has been for years, Pontiac deserves the applause of all automotive critics.

There are other developments this year that are somewhat extraordinary and worthy of note. Corvair has introduced a whole new line of pickups and station wagons, and Ford a similar line of small trucks on a wheelbase that is shorter than any compact car. Both are introducing the miniature bus on a widespread basis to the American public. Chrysler Corporation has completely redesigned its small pickup and has some interesting engine options.

Most of the detail changes this year were in accessories, and standard power components. I am sure that even the engineers cannot be absolutely sure that they will work satisfactorily until the paying customers begin rolling up the miles on their individual cars. For the most part they are a little more complicated and are being introduced to make things work easier, last longer or to improve an existing system. All anyone can say now is that they sound good, and if they prove to be half as good in practice as they are made out to be in the advertising, they will probably be around for a long time.

But to merely talk about detail developments would be to overlook a serious problem of 1961 — one that does not belong exclusively to this model year nor to any individual company. But this is an issue which could cause the automobile industry

more gray hairs and furrowed brows than any engineering race.

I would like to call this problem "built-in obsolescence," but this word has rolled around the pages of so many publications that it has lost its meaning. Most persons connect it immediately with styling and the radical changes we have seen in the appearance of cars in recent years. This is a definition that I think has lost its value. 1960 and 1961 have proved that engineering is once again popular with the public and mechanical changes are beginning to sell cars again. I am certain that within five years the major change each year will not be styling — but engineering. And I am not so sure that cars will change every 12 months.

Since the former term is an admitted cliché, let me call the problem "encouraged depletion of an automobile's life." It all began a few years back when auto makers suddenly realized that they weren't getting as high a proportion of the public's income as they formerly had. Making cars is a big industry, and to stay in business they had to bring in millions to meet their overhead and show a profit. Economists call it dollar volume. The manufacturer's answer wasn't actually the horsepower race — this was only a small but well publicized part. The real answer was the "more car per car" theory. This was simple — sell the buyer the car but offer him attractive options that he won't want to turn down. Cars began offering bigger engines, automatic transmissions, more elaborate interiors, air conditioning, power steering, power brakes and every option Detroit's best engineering talent could make work.

Don't misunderstand me — I would be the last person to say that these developments are unwanted, unjustified or even undesirable. But by themselves, and as a group, they have created Detroit's most serious problem for 1961 — and probably the next five years. "Encouraged depletion," like the "more car per car" theory, has been grossly overlooked by automotive critics, but the subject is being heard more and more each day.

To explain more fully, a few years ago a man could buy a car three to five years old and be assured of getting reasonable use for several thousand more miles. Today the case is far different. Those who are buying second-hand cars may drive them for a few months and hear a whistle, knock or perhaps a klunk and the car stops dead in its tracks. After a diagnosis by a mechanic, the unhappy owner may find himself with a \$300 to \$500 repair bill — and frequently his only alternative is to sell the car for a huge loss. Unfortunately, the same holds true for many who buy their cars new and intend to own them for three to five years.

To automotive experts this is a paradox that is hard to understand. Those who know cars best fully realize that today's cars are built far better than they were 20 years ago. Generally speaking, the materials are better, the engineering is superior and the overall design far outdistances that of previous cars. Why, then, is the average life of a car decreasing gradually



each year? There is more and more evidence that the reason is that accessory components are not built, nor engineered, to last as long as the more fundamental parts of the automobile.

Recently critics have sharply censured Detroit on this problem. The auto makers' answer has been a shrug of the shoulders and the glib explanation that since people are driving more miles each year, it is only natural that cars will wear out faster. But is this explanation valid?

In contradiction there are some cars on the road today that are far past their prime. There are, in fact, hundreds of thousands of automobiles still giving good service that are almost 10 years old and others that are even older. Almost without exception they are cars with few power or power train accessories. And those older cars with these extras that are still operating are

usually unsatisfactory or have had many expensive repairs.

I do not suggest that Detroit ever planned "encouraged depletion." The simplest kind of common sense would tell anyone that if they had, the repercussions could easily be more disastrous than anything that ever happened to the automobile industry. It is just something that developed as a natural result of the "more car per car" theory. I am also sure that it is something that Detroit sincerely wishes that it could solve.

But this cannot erase the problem. It is there, and it must be solved. The answer is simple, too — automatic transmissions, engine options, power accessories, and a host of other components must be made less complicated and for longer life. To solve it isn't so easy. It will take a tremendous amount of ingenuity and, unfortunately, probably a little genius.

## "I like the idea of bigger engines in smaller cars."

*John Lawlor*

**LET'S GET RIGHT TO THE POINT**—I think the new General Motors compacts are terrific. I've long believed the ideal sedan should be relatively small and maneuverable, yet have plenty of power and a quality finish. The Jaguar 3.8 is a good example. For 1961, Buick, Oldsmobile and Pontiac have come up with just such cars.

I don't mean to suggest the Special, F-85 and Tempest rival the Jag. They don't. But they do reflect the same kind of thinking and, within their price limits, are every bit as well conceived.

What's more, they contain a host of important technical innovations. Buick, which developed the aluminum V-8 used by all three, deserves tremendous credit for making such an engine possible on a mass scale. Previous V-8's made of the light metal were found only in a few costly foreign makes, notably the Rolls-Royce.

The automatic transmissions of the three differ in design but have the common advantage of simplicity for lower costs and greater reliability.

Finally, the Tempest has opened a new era in chassis engineering by leaving the engine in front and moving the transmission to the rear. Lancia pioneered such a layout, but Pontiac has placed its benefits within the reach of any new car buyer. By equalizing weight distribution, it means both a smoother ride and steadier handling.

I'm not trying to run down Buick, Oldsmobile and Pontiac by accusing them of borrowing a few ideas from Jaguar, Rolls-Royce and Lancia. On the contrary, I think the comparison shows how great GM's latest achievements really are. That a group of popular-priced American cars could have so much in common with Europe's most exotic makes is extremely significant.

One new feature leaves me cold, however. That's the crooked driveshaft. Whether double-jointed like the Special's and F-85's or bent into a bow like the Tempest's, its sole purpose is to flatten the interior floor. The body shared by the three isn't wide enough to seat five or six comfortably in the first place, so why go to all that bother for the sake of a little more mid-seat foot-room? It adds a complication that's out of keeping with the cars' overall efficiency of design.

Another new compact that I find intriguing is the Dodge Lancer. While it's derived from the Valiant, it seems to be better finished and, as an option, offers the big six-cylinder engine used in the Dart and Plymouth. Add to this the Hyper-Pak intake manifold, and the little Lancer might well be the sleeper of the year at the dragstrips and dirt tracks.

I'm also glad to see hotter engines available in the Falcon

and Comet. Good as these two cars were in their original form during 1960, they were a little undernourished for some driving conditions.

Yes, I like the idea of bigger engines in smaller cars. A few cynics are already lamenting the trend to higher horsepower in the compacts but they overlook the fact that the economy versions are still available. As long as that's the case, I see no reason for complaints. Instead, let's be grateful Detroit has given us the choice we have between low fuel consumption and high performance.

For the budget-conscious, there are two new compact Sixes worth noting, both ingenious adaptations of earlier designs. Studebaker has reworked the old Champion engine into a modern, overhead-valve unit, while Rambler has converted what it now calls the Classic Six to an aluminum block.

Two of the compacts that first appeared last season have made welcome additions to their lines. The Valiant is now offered as a two-door sedan and hardtop, while Chevrolet has introduced a pair of Corvair station wagons. The Corvair Lake-wood is a particularly clever design, combining as it does a conventional wagon body with a rear-engined layout. Its running mate, the Greenbrier, shows an obvious Volkswagen influence but is the kind of specialized vehicle Detroit should have started building long before now.

And the Rambler American, the car that started it all more than a decade ago, has appeared in a more modern costume. The series now includes a convertible, the success of which may determine whether other compact manufacturers will get out of their sedan/wagon ruts and produce more sporting body types.

The American has also been the subject of one of the year's most interesting policy statements. Its manufacturer has announced that the car will remain essentially the same for several years to come, extending pride of ownership and high resale value for its owners. Since the model it replaces was seldom changed during its long career, I think we can take the company at its word.

So far, I've devoted my attention to the compact field because that's where the most significant things are happening. Turning briefly to the full-sized cars, I'm most impressed by a new emphasis on convenience.

One of the biggest annoyances of owning a car, the need for frequent lube jobs, has been all but eliminated by Ford, Mercury, Lincoln and Cadillac. All four have sealed joints that require little or no attention.

*continued*

Chrysler has adopted the alternator throughout its entire line. While this is only one of several refinements in the new big cars, I consider it particularly important because it promises to reduce one of the most common motoring difficulties, the dead battery. By providing plenty of current at all engine speeds, the alternator keeps the rate of charge up and drain on the battery down.

But probably the least troublesome car of them all will be the new Lincoln Continental. With a basic design as solid as a tank, it's subjected to fantastic quality control. No break-in and no adjustments are supposed to be necessary once the car leaves the factory.

**"... a brand new buying impulse that told most car builders they had guessed right for '61." Bill Dredge**

**A**N EARLY REACTION to the new cars for 1961 was summed up by one tired reporter at preview time. "That mighty white knight, Sir Detroit, mounted his charger and rode off in all directions."

The wisecrack was occasioned, of course, by the auto industry's obvious 1961 determination to become all things to all people — all people who might buy any kind of a new car, at any rate.

But 30 days later that cynical crack was due to be rechewed, for it began to look like that same white knight might well become the slugger in a charge to dispel threatened economic doldrums, so heavy had new car showroom traffic become.

Reason for the sales spurt was twofold. The retailers had to do or die with an inventory of '60 cars that topped a staggering 800,000 unit total. So all through September, the clean-up went along in gang-buster, hard-sell fashion.

And when the '61s finally hit hard in mid-October, the public was further moved by a brand-new buying impulse that told most car builders they had guessed right again for '61.

At this point, even the most die-hard conservatives in the sooty towers of Detroit were conceding that this marked the real year of the revolution. Compact, or "smaller" cars were after all something more than (a) a passing fancy and (b) a come-again flyer at the old Marquette, Rockne, Ajax search for an "extra business" romp into the low-priced field with made-over versions of middle-priced cars.

For this year, for once, a fair number of the 1961 offerings were really "new — all new" as they love to say in Detroit.

The standouts for '61 were easily spotted by the most feeble-minded experts. They were the three aluminum-engined V-8 small cars from General Motors — Tempest, F-85 and the Special. The "hot news" car of the year is unquestionably Pontiac's four-banger version of the Tempest (which also comes with the aluminum V-8). This car, with its fantastic curved and jointless drive train, the first transaxle in the industry, and a whacking big bottom end borrowed from the parent Pontiac V-8 block, provided more copy than most writers could find space for.

But there are other top-line accomplishments to excite the experts this year. George Romney wasn't dozing at the cash box when he converted his outmoded little American to a sleek, Italianate little diamond and dug into the bankroll for an aluminum-block, rocker-arm Six to use in his Rambler "Classic" series. And Harold Churchill at Studebaker, not loaded with loot enough for an all-new vehicle, came up with a most interesting overhead-banger Six and some good body changes for his Lark, including a hardtop, with the added fillip of a four-speed floor-shift gearbox for his really classic Hawk line.

The new Continental's smaller size also adds to its convenience. More than a foot shorter than last year's model, it's no more difficult to drive and park than a typical low-priced car.

Finally, for those who can't afford anything as well-built as a Continental, both big and small cars are now covered by a longer warranty — 12 months or 12,000 miles. Just what this means, I'm not yet sure. Theoretically, it gives the new owner all the more time and opportunity to have minor faults corrected. In an industry that, generally, has a lot to learn about manufacturing quality, this could be one of 1961's most far-reaching developments. Meeting the terms of extended warranties might awaken Detroit to the poor job it often does.

Ed Cole, The Man over at Chevrolet, wasn't letting his troops doze in the sun either. He pulled an entirely new vehicle idea out of the hat with a Corvair truck line which includes the sports bus, first really new idea in American cars since the hardtop and the steel station wagon. To it he added a side-loader pickup that has made mouths water among the camper enthusiasts. The sports bus will have a camping equipment accessory option which makes it even more attractive, and Cole has designed these vehicles with beefed-up front ends from the 1958 Chevy big cars, stronger rear suspensions, added horsepower (98) and optional three- and four-speed gearboxes or automatic transmissions.

He admits his ideas in the bus field copy the Volkswagen and other European combi-bus models, but he thinks they may start an entirely new motoring concept in this country. A lot of auto writers, including this one, agree.

Cole, who supposedly defied management on both his Corvette and Corvair projects, has more aces up his sleeve in the form of a super sports Monza which will be practically a competition car and far hotter in trim and equipment than the standard Monza with four-speed box and 98 hp. This car plus a Corvair convertible are due in late November or soon after.

There are other small-car soft-tops on the way, most of them slated for the sluggish wintertime selling period of January-February, and if this late-late show trend continues, we may have two new-model seasons a year instead of one. The industry watched with interest and envy the way the late-coming Comet fired up sales in the forepart of 1960.

This aluminum engine business is really far more significant than some of the auto industry salespeople seem to realize. And the aluminum salesmen should be holding the biggest all-clap-hands party in history, for not only has GM appeared with four aluminum engine-transmission units, but Romney offers aluminum blocks in his Sixes, and Plymouth, Dart, Lancer and Valiant all plan aluminum blocks later in 1961.

Lightest of these rigs is the 80-pound Corvair head-crankcase combo (the cylinders are cast iron) and next lightest bare block is Rambler (mated to an iron head). The block alone weighs 64 pounds. The skinned block and head combos in the GM little-car trio weigh only 105 pounds.

Not the subject of as much talk but almost as important are the new transmissions for 1961. All are much lighter and smaller. Hydramatic has done a bang-up job with a little three-speed automatic which may show as much promise to speed merchants as the aluminum engines (and every midget, sprint car and sports car racing bug you meet is thinking in terms of modified GM aluminum engines for next year's racing season).

The manual shift transmission and clutch developments have also been notable in the '61 design accomplishments and it

begins to look like the day of the genuine, usable four-speed stick transmission is finally with us, and Borg-Warner takes the credit here.

Styling is a subject on which more auto writers should bow out in favor of letting Joe Public decide, for in this area, one man's meat is obviously another's poison. The big news on this topic in 1961 is size reduction, a direction everyone seems to applaud. Even Cadillac has a short-deck model coming up for those owners of it'sy-bitsy teeny-weeny garages. The other facet of styling seems to be a total triumph of the Thunderbird roof line, to which has been added what the English coachbuilders call the knife-edge theme. All this makes for crisp-looking vehicles, and if you can overlook the disturbing note of copying, today's cars do look like today's times.

There is an obvious retreat for many makers (like Mercury) from what had been well fortified positions in the medium-priced field. Merc has finally joined the old Ford family with a car small enough to operate well with a Six. And don't forget that the six-cylinder engine is the orphan stepchild which finally inherited the old mansion of high dollar sales.

In the size-planning department, everyone decided to get into bed with Ford, Chevy and Plymouth in that fine \$2500 to \$3200 marketing area and just about everyone managed to crowd in.

This has served to let the original band of compact revolutionaries like Rambler American, Lark Six, Falcon, Corvair, Valiant and Comet operate pretty much alone in their cozy, first floor \$2000 to \$2700 price territory. And this price segment might just turn out to be the greenest pasture of them all when the final sales figures are totaled up.

There has been a refreshing abandonment of gadgetry for 1961. Chrysler Corporation has dumped the swivel seat nonsense, finally produced a Plymouth shorn of fins and wistfully harked back to the days when radiators were pointed and classy with their "Classic Look" on the Imperials. They held tightly to the fearsome and excellent ram induction manifolding on most of their cars and provided Dodge dealers with almost a carbon copy of Valiant under the Lancer marque.

Ford dumped the '60 styling, leaned harder on the Thunderbird theme, of course, than anyone, and produced a T-Bird which continued the '60 slant nose, exaggerating it to the point where a competitive stylist called it, enviously, "a really wild machine." Lincoln followed the pattern of T-Bird success with a hardtop and convertible both knocked-out enough to satisfy a range of buyers from the most ambitious starlet to the most prestige-happy executive.

General Motors, of course, has been heavily discussed already, but their styling, also all-new and fresh, makes their big cars appear smaller and their small cars look bigger. The "pointed look" might be one way to describe the GM lines.

At the same time, Ford continued to make noises like a Hummingbird, an Oriole or maybe a yellow-bellied Sapsucker — in other words, a small-small front-drive vehicle calculated to take a telling blow at the imports which are still accounting for about six per cent of U.S. car sales. If that comes to pass, Ford will surely be joined by GM, and doubtless by Chrysler, for a whole new and rambunctious phase of the Automobile Revolution.

But that puts us into the 1962 model year — a little too far ahead right now, when interiors of the '61s smell so inviting.

**"...the engineers are being given more 'say so'."**

*Barney Navarro*

**T**HE MOTOR CITY'S latest offerings demonstrate to an even greater degree than last year's models that the engineers are being given more "say so." Where this is particularly apparent is in the designs of the newest compacts. These cars are doubtless a preview of what we may expect to see adopted by the whole industry.

Pontiac's Tempest best demonstrates how far a break with tradition can be carried if a group of engineers are allowed to use some imagination. The unheard-of use of a flexible driveshaft did more than lower a floor hump — it made certain practices possible and still others necessary that resulted in one of the most thoroughly integrated power trains ever used in an automobile. By literally joining the engine, driveshaft housing and transaxle together in one long "bolt-together" assembly, it is possible to support this assembly with four engine mounts soft enough to make a four-cylinder engine acceptable for a modern automobile.

Buick transmission designers should receive the prize for the cleverest idea to eliminate gears since the first torque converter appeared in an automobile. This idea is so clever that it will become apparent to a very few unless considerable mention of the principle is made throughout the year. Instead of employing gears for reversing the vehicle, the natural tendency of the torque converter's stator to rotate backwards is being utilized.

Torque converter stators are always fitted with one-way clutches that function like a bicycle coaster brake. When the converter is called upon for torque multiplication, the one-way clutch "anchors" the stator so that it can re-direct the oil from the pump to the turbine. Without this clutch, the stator will not act as an "oil flow backstop" but will rotate backwards. By disengaging the one-way clutch and connecting the stator to the

output shaft of the transmission with a positive clutch, the reversing tendency of the stator is utilized to back the car without use of gears. I hope this little trick finds its way into more cars.

A very sensible approach to the economics of the individuality in engine design is being taken in the B-O-P line of smaller cars. In addition to the utilization of parts from the large V-8 for production of the Four, the three manufacturers have reduced the tooling and production costs of their aluminum V-8's considerably by sharing identical block assemblies. Since Buick, Olds and Pontiac engine designers disagree only on cylinder head configuration, they can still have individuality in this area but with a reduced overall cost.

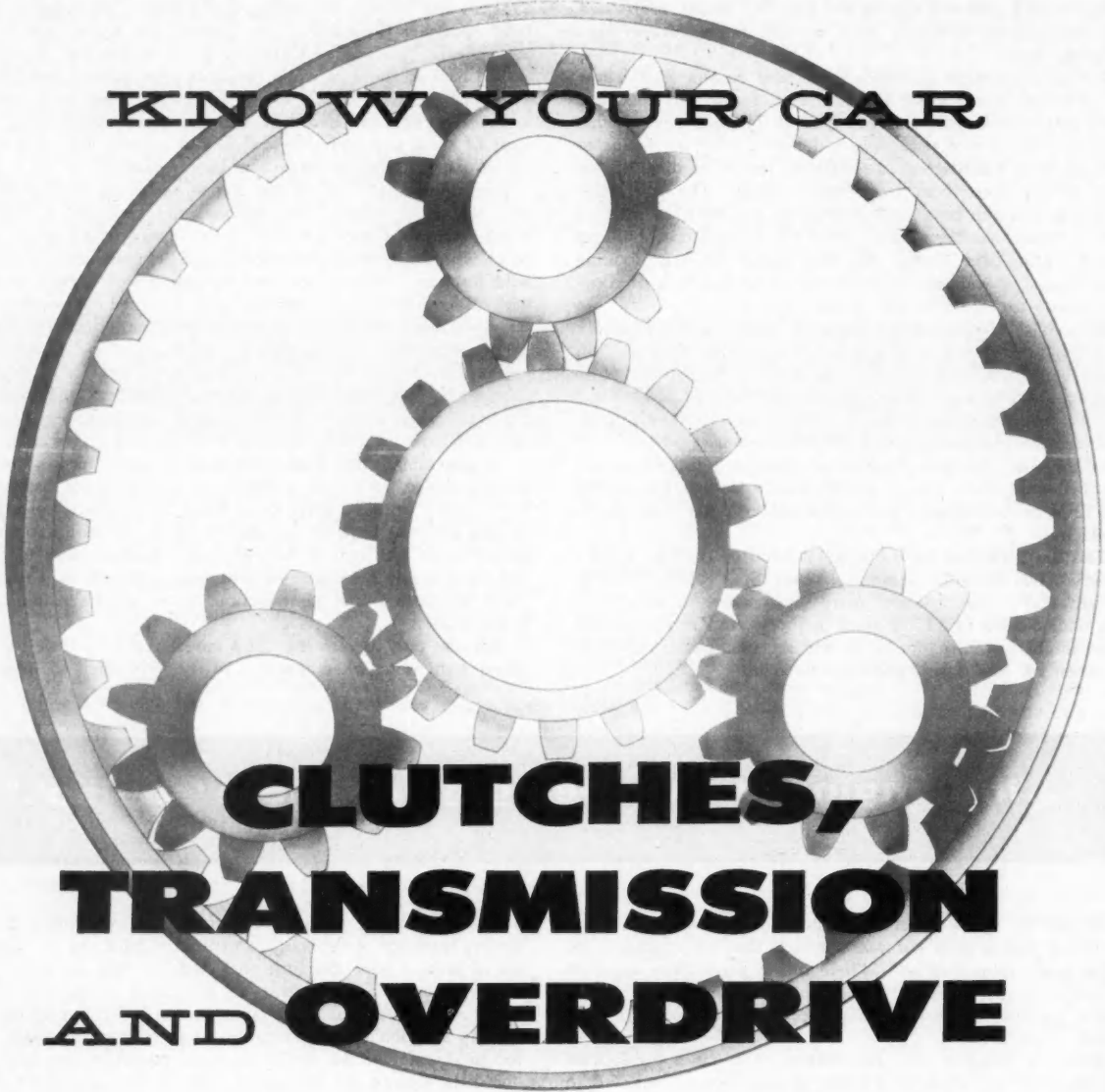
GM has finally come up with a luggage compartment configuration that does more than provide cubic foot capacity figures. Incorporating a sink-like well in the trunk floor now adds some useful depth to a formerly over-rated region. This well, in addition, restricts the movement of articles placed within its confines. Removal of the gas tank from the area now occupied by the well has resulted in a more practical and safer forward mounting of this very necessary container.

From a mechanical and design standpoint the '61s show considerable progress, but styling still displays considerable "buttons and bows" thinking. When an ultimate shape is developed, it shouldn't be necessary to treat it like the styling of women's clothing.

I was very pleased to see the complete removal of Plymouth's ugly 1960 fins but am very disappointed in the fin treatment of the new Cadillacs. Pectoral and dorsal fins may serve a very useful purpose on fish, but on an automobile they look like childish make-believe. Cad designers seem to forget that they are working on a wheeled vehicle.

/MT





# KNOW YOUR CAR

## CLUTCHES, TRANSMISSION AND OVERDRIVE

by Robert W. Temple

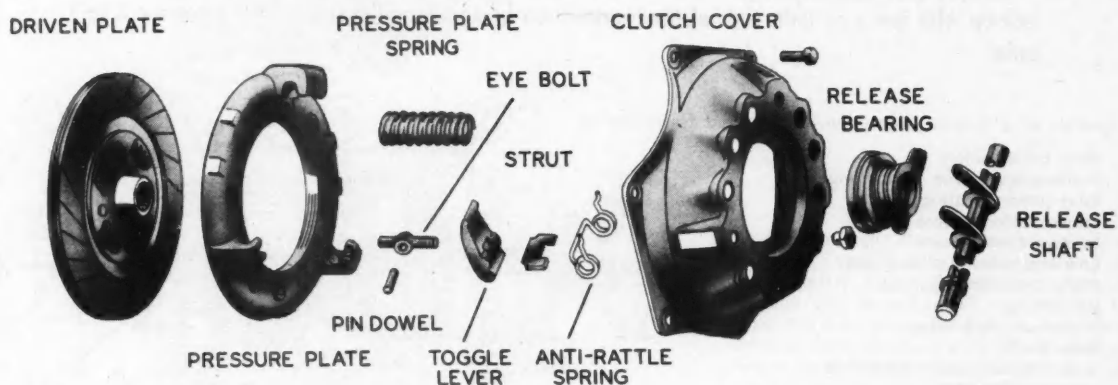
**S**INCE WE STARTED the KNOW YOUR CAR series in the July issue, we have been primarily concerned with the construction and basic operating functions of the engine. It's nice to have all of those gasoline-fed horses under the hood, but they are relatively useless until you put them to work.

The consecutive assembly of components which transmits the power of the engine to the driving wheels is known as the power or drive train. In an automatically shifted car, a fluid coupling or torque converter replaces the clutch and the transmission is shifted automatically by contracting bands and multiple disc clutches.

This chapter of the series will concern itself with coupling devices, transmissions and the overdrive unit. We will investigate the rest of the drive train, including those puzzling dual traction differentials in the next chapter.

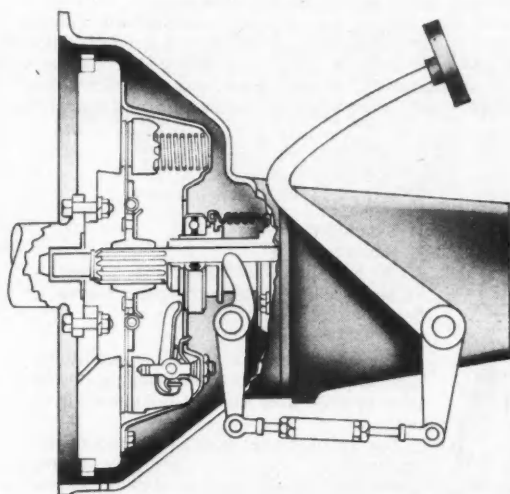
The lead illustration is of a planetary gear set consisting of sun gear in the center, planetary pinion gears which revolve around it and the ring gear on the outside. Despite the fact that this gear configuration brings the name "Henry" and the letter "T" to mind, the planetary gear set plays an important role in modern automobiles, as we shall see.

Does your clutch slip? Well, it is supposed to, up to a point. Your engine power first becomes evident at the flywheel but everything else in the drive train is stationary, so a coupling device is needed. If this coupling device were positive in action, neither you or your car's drive train components could stand the strain. By slipping a bit upon application, the clutch allows smooth and progressive application of power from the flywheel to the drive train until the drive train has reached a speed matching that of the flywheel. This equalization of speed, of course, takes place at the transmission in-put shaft. Speed of the rest of the drive train is determined by the transmission.



1 In this view we have disassembled a clutch to show you how it is made. For simplification we have shown only one

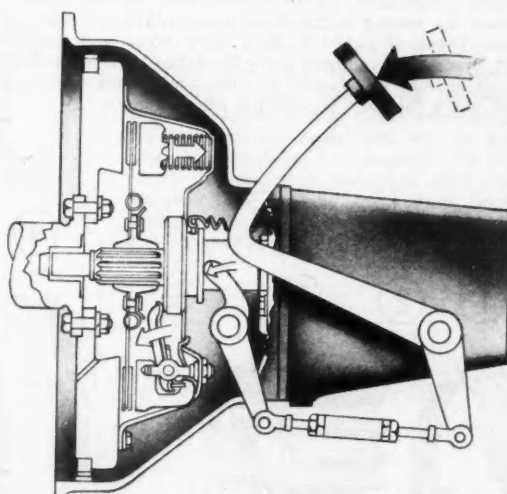
each of multiple parts such as springs, toggle levers, bolts, nuts and pins.



2 A sectional view of a typical clutch in the engaged position. You will note that the clutch driven or friction plate is squeezed between the clutch pressure plate and the flywheel by stiff springs which bear against the clutch cover. The clutch cover is bolted to the flywheel.

The pressure plate may slide fore and aft on the guiding eye-bolts, but is prevented from turning within the cover by drive lugs on the pressure plate and by the eye-bolts. Hence the pressure plate must turn with the flywheel.

The driven or friction plate is splined to the transmission drive pinion and is free to slide fore and aft on the shaft when the pressure plate is retracted.



3 A sectional view of the clutch in disengaged position. Pressure applied on the clutch pedal is transmitted to the clutch release shaft by the clutch release linkage. The release shaft levers bear against the clutch release bearing which, although stationary, has a rotating thrust face. This rotating face, in turn, bears against the pressure plate toggle levers which pry the pressure plate back against the clutch springs, thereby releasing the clutch.

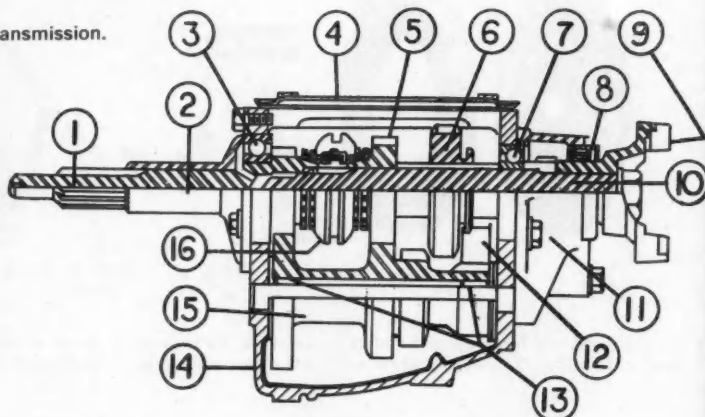
Since an engine develops its power progressively as its speed increases and you cannot drive at full throttle all of the time, some means must be provided to adapt the varying power output of the engine to the varying requirements of driving. This is accomplished by feeding the power from the engine through the progressive ratios of a transmission.

At extremely low speeds your engine does not have enough power to move the car unless it is multiplied. This is because power impulses are more widely spaced and the inertia force of the rotating parts is low. So for starting from a standstill the transmission has a low gear with a ratio of around 2.5 engine revolutions to one revolution of the out-put shaft.

Second gear is usually about 1.5-to-1 in-put to out-put ratio, and high gear is a straight-through lock-up with rpm's on both ends of the transmission being equal. Reverse gear is around a 3-to-1 ratio.

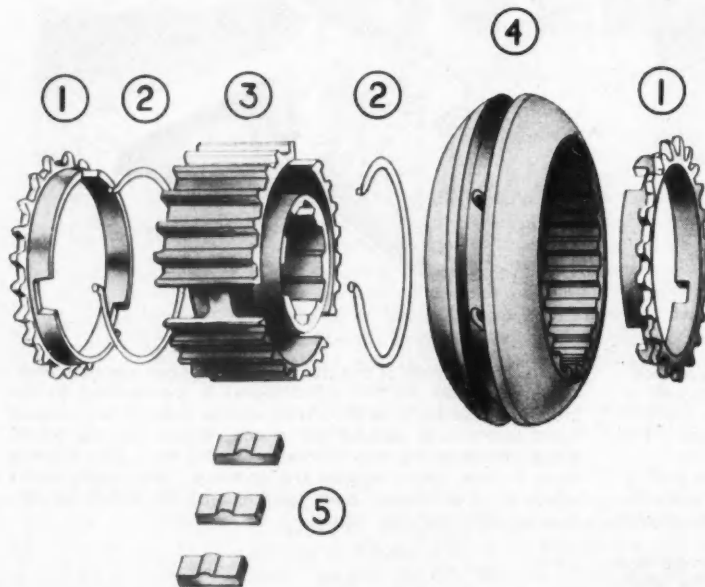
#### 4 Section of a typical progressive three-speed transmission.

1. Main drive pinion
2. Transmission case front flange
3. Rear pinion bearing
4. Transmission access cover
5. Second speed gear
6. Low and reverse sliding gear
7. Main shaft rear bearing
8. Oil seal
9. Universal joint flange
10. Main shaft
11. Transmission case rear flange
12. Reverse idler gear
13. Countershaft gear cluster bearings
14. Transmission case
15. Countershaft gear cluster
16. Second and high synchronizer assembly



Early progressive transmissions selected the consecutive speeds by sliding straight-cut spur gears in and out of mesh. These straight-cut gears were noisy and difficult to shift, since they required the gymnastics of double-clutching to synchronize the speeds of main-shaft gears and countershaft gears for each succeeding ratio change.

Modern conventional transmissions such as the one described here are of the constant-mesh variety, using a synchronizing ring assembly to select the desired ratio. Since first gear and reverse are usually engaged when the vehicle is at a standstill, these gears are unsynchronized, the constant-mesh being reserved for second and high only.



#### 5 A disassembled synchronizer

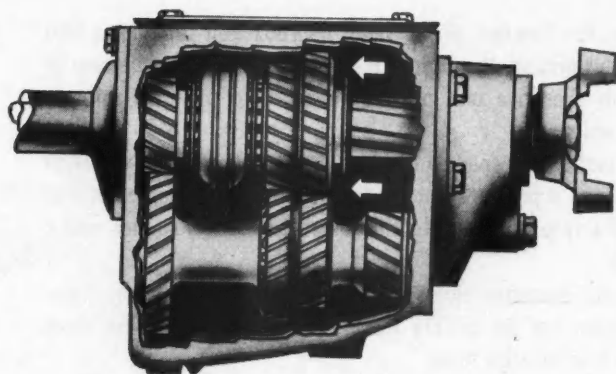
1. Synchronizer ring
2. Retaining ring
3. Second and high synchronizing gear
4. Second and high synchronizer sleeve
5. Shifter plates

The synchronizer assembly is essentially two cone clutches and an engaging device (the synchronizer sleeve) combined in a unit.

The synchronizer gear is splined to the transmission mainshaft and the sleeve slides on splines on the outside of the synchronizer gear. Matching these outer synchronizer gear splines are teeth on synchronizer clutch rings, the rear of the main drive pinion shaft and the front of the second-speed gear.

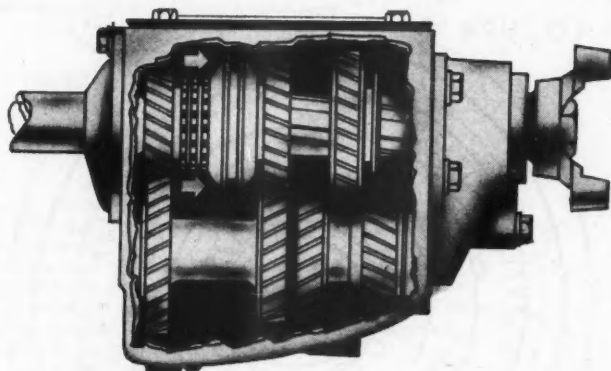
In operation the synchronizer sleeve engages the synchronizer ring, which then applies a frictional drag on the tapered clutching surface of the adjacent gear. As speed between the transmission mainshaft and the selected gear are equalized, the synchronizer sleeve also engages the teeth on the gear ring providing a positive mechanical lock-up between the components.



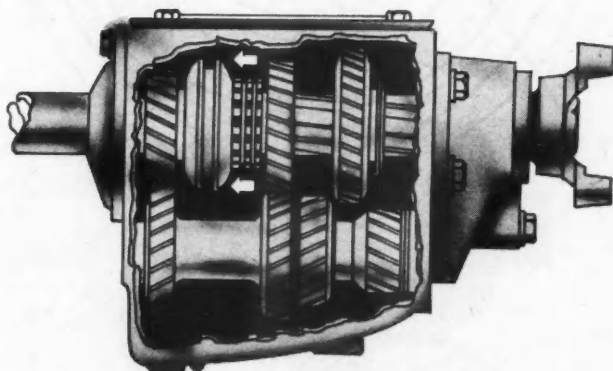


Now let us see how the progressive gear changes in a conventional transmission are accomplished.

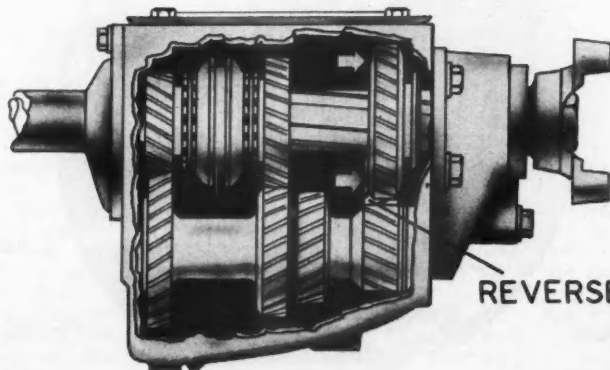
**6** First gear: Low and reverse sliding gear is moved forward on its mainshaft splines to engage the countershaft low gear. Combined ratio of the four gears involved is approximately 2.5-to-1.



**7** Second gear: The low and reverse sliding gear is returned to neutral position. The synchronizer sleeve is moved rearward to engage the second-speed gear, which until now has just been coasting on its bearings on the transmission mainshaft. The second-speed gear is now locked to the mainshaft and the overall ratio is about 1.5-to-1.



**8** High gear: The synchronizer sleeve is moved forward, disengaging the second gear and allowing it to again free-wheel on the transmission mainshaft. As the sleeve progresses forward, it engages the front clutch ring and then the main drive pinion. We now have a solid mechanical hook-up acting as a single shaft straight through the transmission.



REVERSE IDLER

**9** Reverse: The second and high synchronizer assembly is in neutral position. The low and reverse sliding gear is moved rearward to engage the reverse idler pinion which meshes with the rear gear on the countershaft cluster gear.

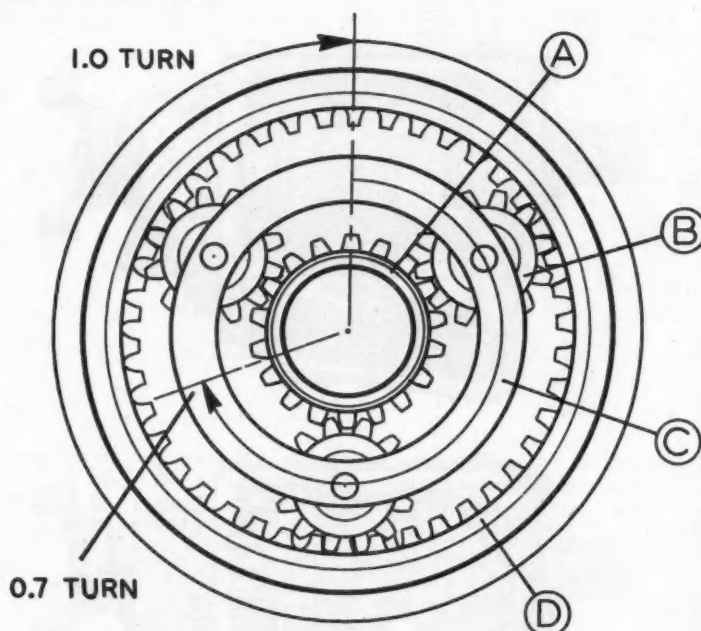
The word "overdrive" aptly describes the function of the small gearbox you sometimes find attached to the rear of a conventional transmission. Its purpose is to increase the driveline rpm in relation to engine rpm. By so doing, an overdrive unit provides a fourth progressive ratio to augment the ratios of a three-speed transmission.

An overdrive is essentially an automatic, two-speed planetary transmission. In conjunction with a conventional three-speed transmission, it provides at least five forward speed combinations, an automatic kick-down feature for highway passing and a thirty per cent cut in engine speed for economy at highway cruising speeds.

The lower rear axle ratio provided with overdrive improves low- and medium-speed acceleration and makes a real work horse of your car for pulling trailers or driving around on steep mountain trails. This is my own favorite transmission setup.

**10** A planetary gear system as used in an overdrive. To function as an overdrive, the sun gear, A, must be held stationary. The planet pinions, B, are rotated around the stationary sun gear by the transmission mainshaft which is splined to the planet cage, C. When the planet cage turns, the planet pinions are forced to "walk" around the stationary sun gear, carrying the ring gear in the same direction at increased speed due to the ratios of the gears involved. The ring gear is splined to the overdrive out-put shaft.

As you can see, .7 of a revolution by the transmission mainshaft and the planet carrier results in one complete revolution of the overdrive out-put shaft.

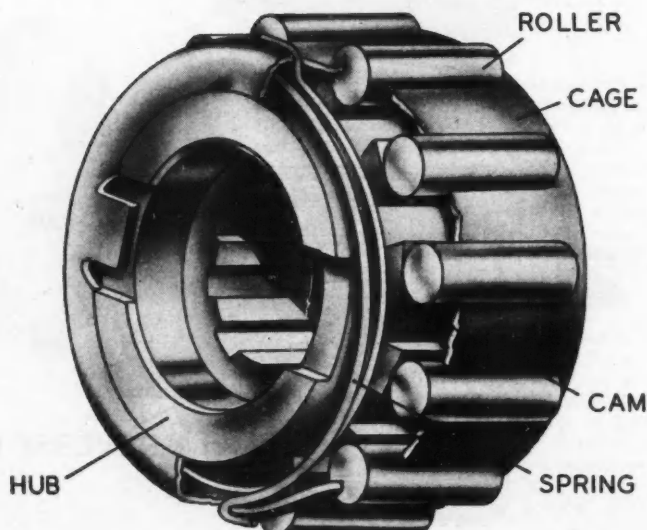


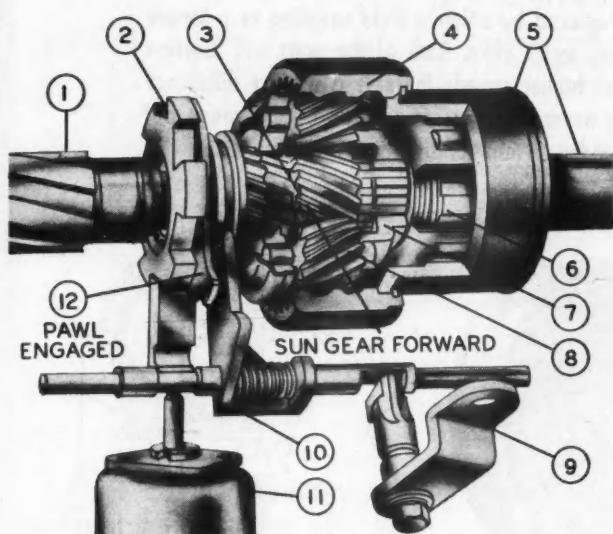
**11** The overdrive free wheel assembly.

This is an over-running clutch which is splined to the rear end of the transmission mainshaft. The assembly is composed of a cage containing rollers, a hub with a tapered ramp for each roller and a spring which holds the rollers up against the ramps. This assembly is contained in a drum which is splined to the overdrive out-put shaft and rotates with it.

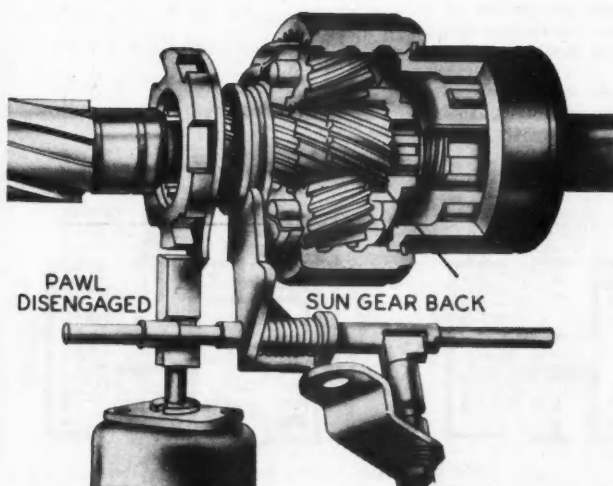
The rollers are always held in contact with the inner surface of this drum, being held there by the spring.

The planetary gear system and the free wheel assembly are the main mechanical components of the overdrive system. Now look at a cutaway of these components as assembled in the overdrive housing.





1. Transmission mainshaft
2. Gear plate (splined to sun gear)
3. Sun gear
4. Ring gear (splined to overdrive out-put shaft)
5. Overdrive out-put shaft
6. Free wheel assembly (splined to transmission mainshaft)
7. Pinion cage (splined to transmission mainshaft)
8. Planet pinions
9. Manual control lever
10. Shifting rail and fork assembly
11. Solenoid and pawl
12. Balk ring



**13** Cutaway view of the overdrive assembly when in direct drive. The overdrive sun gear may slide fore and aft on the transmission mainshaft. In forward position it engages the planet pinions fully and is free to rotate on the mainshaft. In the rear position, the sun gear locks the pinion cage to the sun gear, resulting in direct drive through the overdrive unit.

The sliding sun gear is shifted manually by a rail and fork assembly which is operated by a handle on the dash. The shift rail also locks out the solenoid pawl when in direct drive.

**12** The overdrive sun gear is held stationary by engaging a pawl into a notched gear plate which is splined to the sun gear. The pawl is actuated by a solenoid, which in turn is operated by a governor driving off of the overdrive out-put shaft. The governor closes a set of electrical contact points at around 26 mph.

Operation of the overdrive is not desirable when accelerating from low speeds to speeds above the cut-in point of the governor. When the governor points close, the solenoid pushes the pawl toward the notched gear plate but it is prevented from entering by a balk ring. The balk ring is a drag fit on the gear plate and tends to turn with it.

By momentarily lifting your foot from the accelerator pedal, the engine speed abruptly decreases, vehicle momentum drives the ring gear and the ring gear drives the planet pinions. Because they are receiving power from the opposite direction, the planet pinions drive the sun gear in a reverse direction. This action yanks the balk ring from under the pawl, allowing it to engage the gear plate. This holds the sun gear stationary as you again depress the accelerator pedal. You are now in overdrive.

We have seen how the overdrive up-shift is accomplished, so now let us examine the free wheeling device behind the planetary gears. When your car speed drops below roughly 23 mph with overdrive engaged, the governor points open and the circuit to the solenoid is broken. A spring pulls the pawl out of the gear plate and the sun gear is free to rotate. The planet pinions, if they were allowed to do so, would then spin the sun gear backwards instead of applying power to the rest of the drive train since this would be the path of least resistance.

To overcome this, the free wheel assembly is splined to the rear end of the transmission mainshaft. The out-put ring gear is prevented from feeding back into the planet pinions by the wedging action of the rollers between the hub ramps and the drum. This also results in positive direct drive when the vehicle speed is below the overdrive cut-in point.

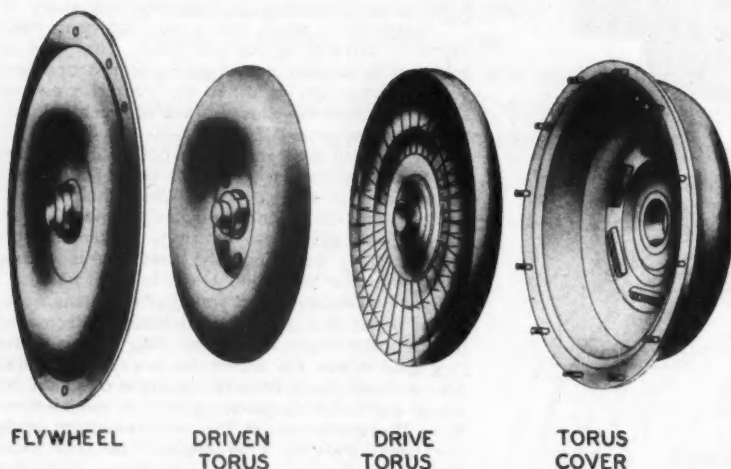
When out-put shaft speed exceeds as in coasting, the rollers move down the ramps and the out-put shaft is allowed to run faster than the free wheel hub which turns at engine speed.

When operating in overdrive, a temporary down-shift to direct drive may be desired for hill climbing or passing. Depressing the accelerator pedal beyond the normal full throttle position actuates the overdrive kick-down switch. This switch momentarily grounds the ignition circuit and opens the governor circuit, thereby de-energizing the solenoid. The engine loses power and relieves the thrust on the gear plate; the solenoid spring retracts the pawl, the free wheel rollers engage as power resumes and you are in direct drive.

To shift back into overdrive, you momentarily lift your throttle foot and the overdrive up-shift is as described earlier.



With automatic transmissions, the clutch is replaced by either a fluid coupling or a torque converter. Outwardly these two units appear very much alike. Both of the units will function as a fluid clutch at engine idling speeds but at higher speeds there is a distinct difference between the results you get. The fluid coupling never transmits more than in-put torque but the torque converter actually multiplies torque under certain conditions.



**14** A typical fluid coupling disassembled.

The two torus members of a fluid coupling are encased by the torus cover which is bolted to the flywheel. The resultant housing is then filled with oil.

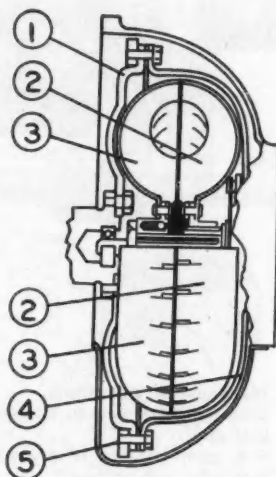
The drive torus is mounted so that it is driven by the flywheel and torus cover. The driven torus is splined to the transmission in-put shaft.

The torus members are divided into compartments by straight vanes radiating from the hub to the shell. As the driven torus rotates, the vanes paddle the oil around with the torus. Since very little oil can escape through the narrow slot between the vanes of the two torus members, the driven torus is also rotated by the oil.

Slippage occurs between the two members at low speeds but as speed increases, resistance to differential rotation between the two members also increases until the two units are rotating at substantially the same speed. Thus we have a fluid coupling which also acts as a clutch.

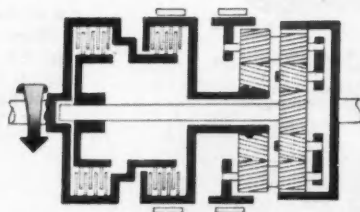
For a simplified look at the workings of an automatic transmission, we will use diagrams of the Flightomatic or Flashomatic transmission as used on Studebaker and Rambler. This transmission consists of a single-stage torque converter twirling a three-speed automatic-type transmission.

A compound planetary gear train is used to provide three progressive forward speeds or reverse, depending upon which sequence of gears is held or driven. The gear train consists of a primary and a secondary sun gear, primary and secondary planet pinions in a common carrier and an internal ring gear which drives the transmission out-put shaft.

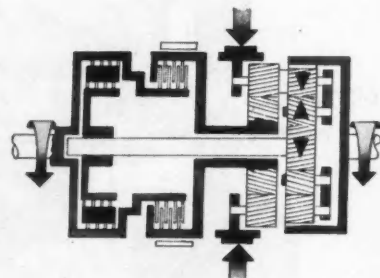


**15** A sectional view of a fluid coupling as used on early Hydramatic transmissions.

1. Flywheel assembly
2. Drive torus
3. Driven torus
4. Torus cover
5. Cover retaining bolts

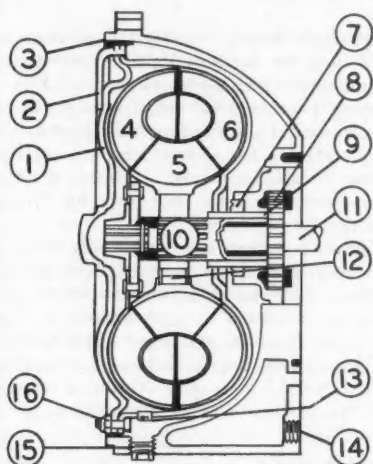


**19** Neutral: None of the transmission members is held or driving. Hence there is no power transfer through the transmission.



**20** Low gear: Front clutch and rear band are applied. The front clutch locks the primary sun gear to the in-put shaft. The rear band holds the pinion carrier stationary.

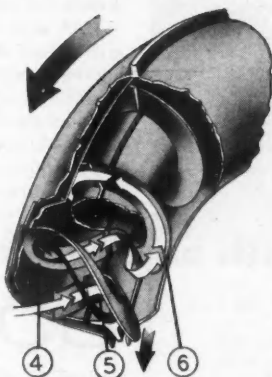
Power flow is from the in-put shaft through the front clutch to the primary sun gear. The sun gear drives the primary pinions, which then drive the secondary pinions. The secondary pinions drive the ring gear and transmission out-put shaft. Total gear reduction is 2.4-to-1.



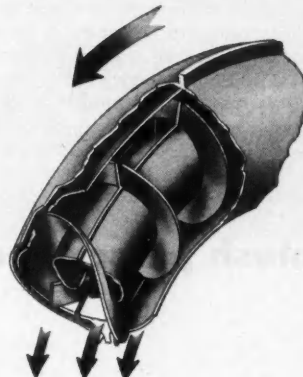
**16** Sectional view of a torque converter.

1. Converter cover
2. Engine flywheel
3. Converter (bell) housing
4. Stator
5. Impeller or pump
6. Impeller or pump
7. Transmission front oil seal
8. Transmission front oil pump

9. Impeller hub
10. Reactor shaft
11. In-put shaft
12. Stator one-way clutch
13. Converter drain plug
14. Transmission drain plug
15. Bell housing drain plug
16. Converter cover bolt

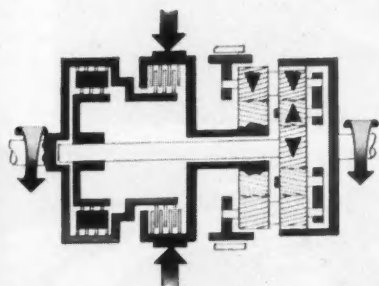


**17** Segment of a torque converter as the impeller starts to rotate. The curved vanes of the impeller force the oil against the opposing curved vanes of the turbine, causing it to rotate. Oil leaving the turbine vanes is redirected to the impeller vanes at an accelerated angle by the stator vanes. This increased fluid pressure assists the impeller in turning. The oil under increased pressure is passed back to the turbine as shown by the diagram, and the cycle continues as long as the converter is in operation. When there is a differential in speed between the impeller and the turbine the force of the oil against the stator vanes tends to turn the stator backwards. The clutch prevents this.



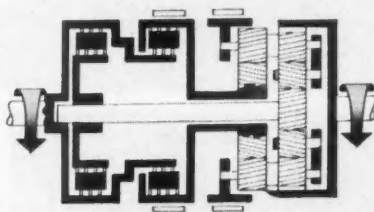
**18** When impeller and turbine are rotating at about the same speed, the stator rotates with them on its free wheeling unit.

Maximum torque multiplication in the single-stage torque converter is about 2.15-to-1, and occurs at stall, i.e. with turbine stationary and the impeller turning at maximum speed. As the turbine picks up speed, torque multiplication gradually decreases until at equal speed there is no torque multiplication at all; the units transmitting power in the same manner as a fluid coupling.



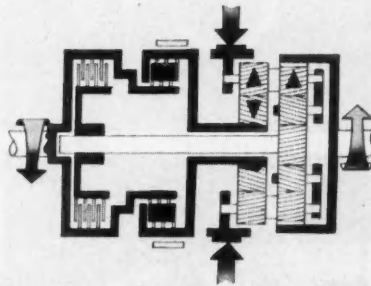
**21** Intermediate or second gear: The front clutch and front band are applied. The front clutch locks the primary sun gear to the in-put shaft. The front band holds the secondary sun gear stationary.

Power flow is from the in-put shaft through the front clutch and primary sun gear to the primary pinions, which in turn drive the secondary pinions. The secondary pinions are forced to "walk" around the stationary secondary sun gear. The ring gear and out-put shaft are carried with them in the same direction. Total gear reduction is 1.47-to-1.



**22** High gear: The front and rear clutches are applied. The front clutch locks the primary sun gear to the in-put shaft. The rear clutch locks the secondary sun gear to the primary sun gear.

Power flow is straight through the transmission without change in direction or ratio.



**23** Reverse gear: The rear clutch and rear band are applied. The rear clutch locks the secondary sun gear to the in-put shaft and the rear band holds the pinion carrier stationary.

Power flow is from the in-put shaft through the rear clutch to the secondary sun gear. The secondary sun gear drives the secondary pinions, which in turn drive the transmission out-put ring gear and shaft in a reverse direction.

**B**ORGWARD'S ISABELLA COUPE, from Bremen, Germany, is a car that almost defies classification in any specific group of automobiles. Shorter than even the Rambler American, the Coupe is not a compact, neither is it a small car. The only logical comparison to recent American cars would be with the original Ford Thunderbird, but even this parallel cannot be drawn too distinctly. Both cars are two-seat coupes and there is a faint trace of similarity in their overall design concept. Beyond that the Isabella Coupe has its own peculiar and individual personality. Economy is excellent, performance fair and handling far above average, but those who prefer the Isabella Coupe will undoubtedly be attracted more by its superior craftsmanship, both inside and out.

Powering the Borgward is a 75-hp, ohv four-cylinder engine which at 91-cubic-inch displacement is a shade under a liter and a half. Basically the difference between this powerplant and the Borgward's standard 60-hp engine is a higher compres-

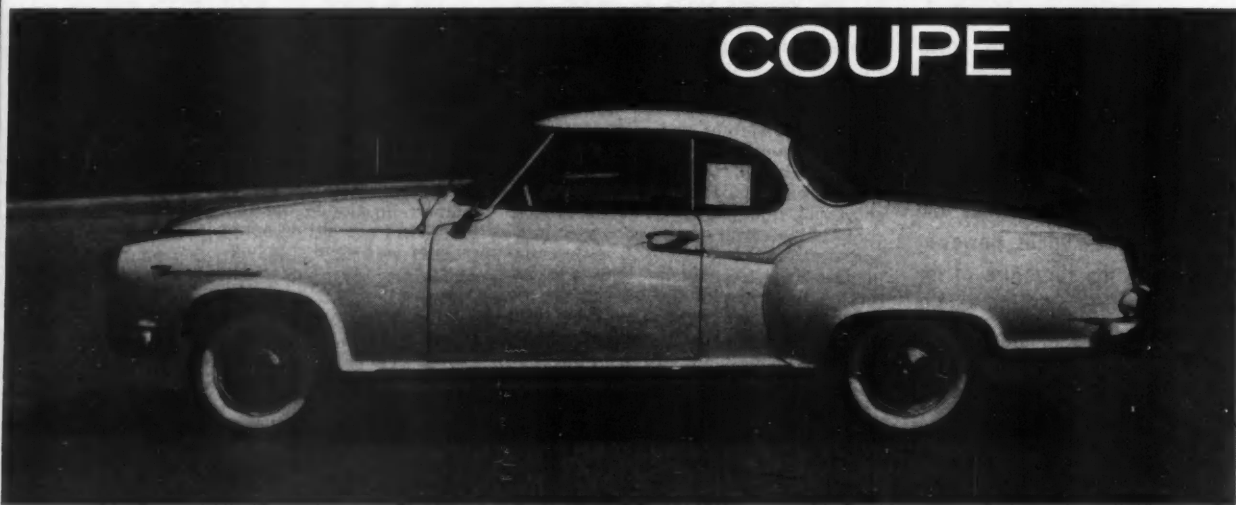
sion ratio and a progressively linked two-barrel carburetor.

Although the Isabella does not have outstanding performance, neither is it underpowered. The 0-60-mph time of 19.4 seconds belittles its around-town driving characteristics. The gearing of the four-speed manual transmission is well spaced and under most conditions the car has at least adequate acceleration for normal driving situations. Shifting, however, is not smooth and precise. The column-mounted shift lever has long throws and much lost motion in the linkage.

High gear in the Borgward's gearbox is a 1-to-1 ratio which gives a final drive of 3.9-to-1. This means the car can maintain highway speeds with little strain or difficulty; top speed is around 95 mph. High gear is limited to approximately a 10 per cent grade and this means either maintaining a steady speed or dropping to a lower gear on long slopes. Third gear is usable to over 60 mph and this is helpful in passing or gaining speed on hills. In slower traffic the Coupe does not lug exceptionally

**a plush personal car with an eye for economy**

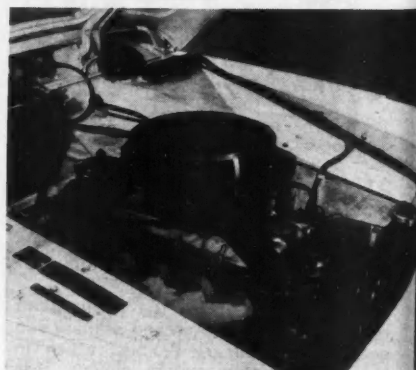
## BORGWARD ISABELLA COUPE



*While Borgward's Isabella Coupe has many specific features that are similar to the old two-seater Thunderbird, it also has many characteristics that are all its own.*



*The Isabella pretends to be nothing but a two-seat car. Note that while the seats are reclining, they are hinged so that the break at the hinge interferes with comfort.*





well and downshifting is frequent, but synchromesh on all gears makes heavy traffic problems easier.

If an engine is not designed principally for power performance, then it should use less fuel as a compensating factor. The Borgward Isabella Coupe does have an excellent, even superior, economy record. The overall average was just under 27 mpg, and this figure was obtained primarily by driving in heavy city traffic.

But more than economical operation, the principal distinction which contributes to the Isabella's individuality as an automobile is its handling. Suspension is beautifully balanced for both smooth highway comfort and bad road durability. Uneven road conditions must be extreme to cause even the slightest discomfort to passengers. Corners can be taken fast and the Isabella tracks true with little body lean on even the sharpest turn.

The car's cornering and handling are due in part to stiffer suspension than American cars, but more than any other single factor, the independent rear suspension is responsible. The Isabella's i.r.s. is a swing axle with coil springs and hydraulic shock absorbers. Oversteering, which is sometimes a problem with this type of suspension, has been adequately compensated for by design.

One somewhat remarkable handling feature is the Borgward's steering. Although the wheel has only 3.5 turns lock-to-lock, this in no way indicates just how fast the steering actually is. Drivers who are accustomed to American cars, many of which have an equivalent lock-to-lock figure, will be more than surprised when turning the Borgward. The Isabella Coupe turns so fast that they may find themselves crawling over a curb or two before they adjust themselves. Less than a full turn of the steering wheel will swing the Isabella around a 90-degree corner. This, of course, makes the car easy to steer, and even when parking the driver seldom has to take his hands off the wheel to negotiate the tightest spots. Along with its quickness, the steering is both light and precise.

The Isabella Coupe is undeniably a luxury car and throughout the interior, both in the choice of materials and the craftsmanship in installing and fitting them, this is more than evident. As was previously mentioned, the car is a two-seater. Both seats are semi-buckets so there is more than enough room for passengers. Headroom is ample and legroom generous. Each seat is individually adjustable and fully reclining. There might be some who would try to crowd extra persons in the back, but this is stretching the definition of the word crowd, and the car is definitely a two-passenger.

One driver control, the ignition key, can be called either good or bad, depending upon how complicated each individual likes his machinery. The engine is started with a small button near the key. When the key is turned to "Start," the button can be pushed and the engine started. Turn the key to "Garage" position and the engine shuts off although all the other accessories, like the radio, stay on. Now the starter button acts as a safety and pushing it releases the key (but doesn't engage the starter motor) so it can be turned to the "Halt" position locking the steering wheel, engine ignition system, and turning off the electrical accessories.

Like its ignition key system, the Borgward Isabella Coupe is a little hard to explain in a few words. It has several good features — and some defects. For instance, although headroom is adequate the tumble home, where the curve of the roof meets the top of the door, is so low that the driver turning his head to look out the window will invariably bump his forehead.

But anyone who is willing to spend the extra \$1000 to \$1500 that the Borgward costs over small imports or domestic compacts isn't looking for just another car to drive. For many the added cost will be entirely justifiable by the Coupe's most important feature — individuality — something that is hard to find in an automobile these days.

/MT

**MT**

## ROAD TEST BORGWARD



### Test Car

**TEST CAR:** Borgward Isabella  
**BODY TYPE:** 2-door coupe  
**BASE PRICE:** \$3550 P.O.E.

### Maneuverability Factors

**OVERALL LENGTH:** 172.8 inches  
**OVERALL WIDTH:** 67 inches  
**OVERALL HEIGHT:** 57.8 inches  
**WHEELBASE:** 102.4 inches  
**TREAD, FRONT/REAR:** 52.5 and 53.5 inches  
**TEST WEIGHT:** 2340 lbs.  
**WEIGHT DISTRIBUTION:** 54 per cent on front wheels  
**STEERING:** 3.5 turns lock-to-lock  
**TURNING CIRCLE:** 36 feet curb-to-curb  
**GROUND CLEARANCE:** 6.9 inches

### Interior Room

**SEATING CAPACITY:** Two  
**FRONT SEAT**  
**HEADROOM:** 38 inches  
**WIDTH:** Semi-bucket seats

### Engine & Drive Train

**TYPE:** Ohv four-cylinder  
**DISPLACEMENT:** 91 cubic inches  
**BORE & STROKE:** 2.91 x 3.33  
**COMPRESSION RATIO:** 8.2-to-1  
**CARBURETION:** Two-barrel  
**HORSEPOWER:** 75 @ 5200 rpm  
**TORQUE:** 83.8  
**TRANSMISSION:** Four-speed manual  
**REAR AXLE RATIO:** 3.9-to-1

### Performance

**GAS MILEAGE:** 24 to 29 miles per gallon  
**ACCELERATION:** 0-30 mph in 5.2 seconds, 0-45 mph in 10.5 seconds and 0-60 mph in 19.4 seconds  
**SPEEDOMETER ERROR:** Indicated 30, 45 and 60 mph are actual 29, 43 and 57 mph respectively  
**ODOMETER ERROR:** Indicated 100 miles traveled is actual 97 miles traveled  
**WEIGHT-POWER RATIO:** 31.2 lbs. per horsepower  
**HORSEPOWER PER CUBIC INCH:** .824

# THE STORY BEHIND THE SPECIFICATIONS

**MOTOR TREND'S monthly specifications charts can solve the questions of many an auto argument**

**H**OW LONG is the new Lincoln Continental? What's the Dodge Lancer's compression ratio? Will the Rambler American clear a road obstacle six inches high? What axle ratios are offered for the Pontiac Tempest? How tight is the Studebaker Hawk's turning circle?

At one time or another, questions like these occur to almost every automobile enthusiast. Whether to compare cars when planning to buy, settle an argument with a friend or just satisfy personal curiosity, accurate information should be quickly and easily available.

To provide an up-to-date reference for such occasions, **MOTOR TREND** features the major new car specifications in every issue. The listings are constantly revised to include new figures as they are released, new power train options announced during the year and, sometimes, even completely new cars that appear in mid-season, as the Comet did in 1960.

The basic source for these figures is a 28-page specification form prepared by the Automobile Manufacturers Association and used by every car maker. Specific standards of measurement, established by the Society of Automotive Engineers, assure that particular specifications for different makes will be comparable. In other words, car "A" cannot claim more headroom than car "B" by taking a measurement at a more advantageous angle. Both "A" and "B" have to comply with SAE practices.

Whenever possible, MT double-checks figures in service manuals and other reliable sources, but the AMA form remains the prime authority.

Once all the specifications have been gathered, there is the problem of sorting out those that are most important and presenting them in an accurate but easy-to-understand form.

This year, for the first time, two separate charts have been prepared. One covers body and chassis dimensions while the other lists engine and gearing details. The reason for the distinction is that there is no necessary relationship between body series and power train.

Buick offers a good case in point. Its Invicta series has the same body size as the lower-priced Le Sabre but uses the same engine as the bigger Electra. All this is simple enough, but to indicate it in a single chart would result in confusion and repetition.

The purpose is to provide complete but comprehensible specifications for easy reference.

Besides providing a source of information for those who need or want it, the specification charts can be fascinating in themselves. Because they contain the basic facts about size and power, they reveal all sorts of interesting sidelights about the new cars.

Take length, for example. From the 173-inch Rambler American to the 242-inch Cadillac 75, the new models vary tremendously in bumper-to-bumper dimensions. Both extremes, incidentally, are slightly shorter than their 1960 counterparts, reflecting the industry-wide trend to smaller size. One noteworthy point is that there is no longer a clear dividing line to distinguish compacts from full-sized cars. The development of the "medium compacts," such as the Buick Special, Olds F-85 and Pontiac Tempest, has closed the gap between the two categories.

Length used to be closely related to price and prestige, but not any more. The elegant Lincoln Continental is quite a bit shorter than several less costly makes, including its own medium-priced running mate, the Mercury.

Setting aside the limited-production Cadillac 75, the Imperial is now the longest U. S. car. Ironically, it was not too many years ago that Chrysler Corporation claimed its products were "bigger on the inside but *smaller* on the outside."

At 81.7 inches, the Imperial is also the widest on the list. Last year, at least eight makes equalled or bettered the 80-inch mark. Among the 1961 models, there are only two besides the Imperial—the Plymouth and Cadillac 75. Surprisingly enough, both of these were less than 80 inches wide in 1960!

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# 1961 BODY & CHASSIS DIMENSIONS

	LENGTH	WIDTH	HEIGHT	WHEELBASE	TREAD		TIRE SIZE	ROAD CLEARANCE	TURNING CIRCLE	SHIPPING WEIGHT	FRONT SEAT			REAR SEAT		
					FRONT	REAR					HEAD ROOM	LEG ROOM	HIP ROOM	HEAD ROOM	LEG ROOM	HIP ROOM
BUICK Special Le Sabre, Invicta Electra	188.4	71.3	52.5	112.0	56.0	56.0	6.50 x 13	4.9	38.1	2616	34.0	43.5	58.6	33.9	37.8	58.2
	213.2	78.0	56.3	123.0	62.0	61.0	7.60 x 15	5.6	44.0	4160	35.1	44.8	63.5	39.2	41.8	63.3
	219.2	78.0	57.1	126.0	62.0	61.0	8.00 x 15	6.0	45.7	4330	35.2	44.9	63.3	34.4	44.6	63.1
CADILLAC 60, 62 75	222.0	79.8	56.0	129.5	61.0	61.0	8.00 x 15	5.1	43.0	NA	34.4	46.0	63.3	34.1	44.5	63.1
	242.0	80.6	59.1	150.0	61.0	61.0	8.20 x 15	6.2	48.0	NA	36.3	44.2	65.5	34.8	NA	60.1
CHEVROLET	209.3	78.4	55.5	119.0	60.3	59.3	7.50 x 14	6.0	40.8	3500	34.5	45.0	63.5	34.0	42.0	63.5
COMET	194.8	70.4	54.5	114.0	55.0	54.5	6.00 x 13	5.9	39.9	2440	38.6	43.9	57.0	37.6	40.8	56.7
CORVAIR	180.0	67.0	51.5	108.0	54.0	54.0	6.50 x 13	6.0	39.0	2355	33.5	44.0	58.5	33.5	36.5	58.0
CORVETTE	177.7	70.4	52.2	102.0	57.0	59.0	6.70 x 15	6.7	37.0	2905	37.0	46.4	59.6	- - -	- - -	- - -
CHRYSLER Newport, Windsor New Yorker 300-G	215.6	79.4	54.9	122.0	61.0	59.7	8.00 x 14	5.2	44.0	NA	37.6	45.1	63.8	38.1	42.4	62.8
	219.8	79.4	55.6	126.0	61.2	60.0	8.50 x 14	5.7	46.6	NA	37.6	45.3	63.8	38.1	42.4	62.8
	219.8	79.4	55.1	126.0	61.2	60.0	8.00 x 15	5.7	46.6	NA	38.1	45.6	NA	38.1	35.4	NA
DART	209.4	78.7	54.8	118.0	61.0	59.6	7.50 x 14	5.0	42.3	NA	37.6	45.1	63.8	38.0	42.1	62.9
DODGE	212.5	78.7	54.9	122.0	61.0	59.7	8.00 x 14	5.3	43.9	NA	37.6	45.1	63.8	38.1	42.4	62.8
DE SOTO	215.4	79.4	55.0	122.0	61.0	59.7	8.00 x 14	5.2	44.0	NA	37.6	45.1	63.8	38.1	42.4	62.8
FALCON	181.2	70.6	54.2	109.5	55.0	54.5	6.00 x 13	5.9	37.7	2315	38.8	44.6	57.1	37.3	39.4	57.0
FORD	209.9	79.9	55.0	119.0	61.0	60.0	7.50 x 14	5.5	41.2	3680	38.2	45.3	62.1	37.6	43.3	61.2
IMPERIAL	227.3	81.7	56.7	129.0	61.8	62.2	8.20 x 15	5.6	48.2	NA	38.9	46.9	61.0	38.3	42.9	60.2
LANCER	188.8	72.3	53.3	106.5	56.0	55.5	6.50 x 13	5.4	37.9	NA	37.9	42.8	56.8	37.4	39.7	56.9
LINCOLN CONTINENTAL	212.4	78.6	53.5	123.0	62.1	61.0	9.00 x 14	5.5	46.7	4771	38.6	44.0	59.7	38.2	40.0	60.7
MERCURY	214.6	79.9	55.0	120.0	61.0	60.0	7.50 x 14	5.7	41.5	3995	38.2	45.3	62.1	37.6	43.3	63.5
OLDSMOBILE F-85 Dynamic 88, Super 88 98	188.2	71.6	52.6	112.0	56.0	56.0	6.50 x 13	NA	37.0	2566	38.2	44.0	58.6	37.1	37.8	58.2
	212.0	77.2	55.8	123.0	61.0	61.0	8.00 x 14	NA	43.0	4024	39.3	44.4	63.3	38.6	41.7	63.3
	218.0	77.2	56.6	126.0	61.0	61.0	8.50 x 14	NA	43.8	4208	39.6	44.1	63.6	38.6	41.7	63.2
PLYMOUTH	209.5	80.0	54.6	118.0	60.9	59.6	7.00 x 14	4.8	42.3	NA	37.8	44.3	63.8	38.0	42.1	62.9
PONTIAC Tempest Catalina, Ventura Star Chief, Bonneville	189.3	72.2	53.5	112.0	57.0	57.0	6.00 x 15	6.0	41.0	2808	38.3	44.1	58.6	37.1	37.8	58.2
	210.0	78.2	55.9	119.0	62.5	62.5	8.00 x 14	6.0	46.0	3849	38.8	45.1	63.2	37.9	40.6	63.2
	217.0	78.2	55.9	123.0	62.5	62.5	8.00 x 14	6.0	46.6	3970	38.8	44.9	63.2	37.9	40.9	63.0
RAMBLER American Classic Ambassador	173.0	70.0	56.2	100.0	54.5	55.0	6.00 x 15	6.6	36.0	2520	35.0	44.0	58.0	33.0	37.5	45.3
	189.9	72.5	57.1	108.0	58.7	59.0	7.50 x 14	6.7	37.3	2950	36.0	43.0	59.8	34.5	40.0	60.1
	199.0	73.6	56.9	117.0	57.7	59.0	8.00 x 14	6.3	39.8	3430	36.0	43.0	59.8	34.5	40.0	60.1
STUDEBAKER Lark Lark Cruiser Hawk	175.0	71.4	56.5	108.5	57.4	56.6	6.50 x 15	6.1	37.5	2966	35.2	43.5	59.5	34.7	NA	59.0
	179.0	71.4	56.5	113.0	57.4	56.6	6.50 x 15	6.1	39.0	3000	35.2	43.5	59.5	34.7	NA	59.0
	204.0	71.4	55.5	120.5	57.4	56.6	6.70 x 15	6.8	41.0	3207	34.5	44.0	59.5	33.7	NA	58.0
THUNDERBIRD	205.0	75.9	52.5	113.0	61.0	60.0	8.50 x 14	5.6	NA	3852	37.5	43.9	59.2	37.6	40.4	56.8
VALIANT	183.7	70.4	53.3	106.5	56.0	55.5	6.50 x 13	5.4	37.1	2695	37.9	43.0	56.8	37.4	39.7	56.9

## MOTOR TREND'S 1961 CAR SPECIFICATIONS

All figures listed are for four-door sedans. If that body type is not offered, data for four-door hardtops is listed. Obvious exceptions are such cars as the Thunderbird and Corvette. All specifications are the latest as announced by the manufacturers. Additions and corrections will be made each month in order that our readers may have the most complete and authoritative figures on Detroit's new cars. (Entries marked "NA" contain information not available at the time of publication.)

# 1961 ENGINES & GEARING

TYPE	HORSEPOWER	TORQUE @ RPM	DISPLACEMENT	BORE AND STROKE	COMPRESSION RATIOS	CARBURETION	(AXLE RATIOS)		
							AUTOMATIC	MANUAL	OPTIONAL
BUICK Special	V-8 155 @ 4600	220 @ 2400	215	3.50 x 2.80	8.8	1 2-bbl.	3.08	3.36	---
Le Sabre (standard)	V-8 250 @ 4400	384 @ 2400	364	4.13 x 3.40	10.25	1 2-bbl.	3.07	---	---
Le Sabre (optional)	V-8 235 @ 4400	375 @ 2400	364	4.13 x 3.40	9.0	1 2-bbl.	3.07	---	---
Le Sabre (optional)	V-8 300 @ 4400	405 @ 2800	364	4.13 x 3.40	10.25	1 4-bbl.	3.23	---	---
Invicta, Electra, Electra 225	V-8 325 @ 4400	445 @ 2800	401	4.19 x 3.64	10.25	1 4-bbl.	3.23	---	---
CADILLAC	V-8 325 @ 4800	430 @ 3100	390	4.00 x 3.80	10.5	1 4-bbl.	2.94	---	---
CHEVROLET Six	6 135 @ 4000	217 @ 2000	235	3.56 x 3.94	8.25	1 1-bbl.	3.08, 3.36	3.36	3.55, 3.70
170	V-8 170 @ 4200	275 @ 2100	283	3.87 x 3.00	8.5	1 2-bbl.	3.08, 3.36	3.36	3.70
230	V-8 230 @ 4800	300 @ 3000	283	3.87 x 3.00	9.5	1 4-bbl.	3.36	3.36	3.70
250	V-8 250 @ 4400	355 @ 2800	348	4.12 x 3.25	9.5	1 4-bbl.	3.08	3.36	---
280	V-8 280 @ 4800	355 @ 3200	348	4.12 x 3.25	9.5	3 2-bbl.	3.08	3.36	---
305	V-8 305 @ 5600	350 @ 3600	348	4.12 x 3.25	11.0	1 4-bbl.	3.55	---	---
320	V-8 320 @ 5600	358 @ 3600	348	4.12 x 3.25	9.5	1 4-bbl.	---	3.70	---
335	V-8 335 @ 5800	362 @ 3600	348	4.12 x 3.25	11.25	3 2-bbl.	---	3.70	---
COMET 144	6 85 @ 4200	134 @ 2000	144	3.50 x 2.50	8.7	1 1-bbl.	3.50	3.50	---
170	6 101 @ 4400	156 @ 2400	170	3.50 x 2.94	8.7	1 1-bbl.	3.50	3.20	---
CORVAIR Turbo-Air	6 80 @ 4400	128 @ 2300	145	3.44 x 2.60	8.0	1 2-bbl.	3.27	3.27	3.55
Super Turbo-Air	6 98 @ 4600	132 @ 2800	145	3.44 x 2.60	8.0	1 2-bbl.	3.27	3.27	3.55
CORVETTE	V-8 230 @ 4800	300 @ 3000	283	3.87 x 3.00	9.5	1 4-bbl.	3.55	3.36	3.70, 4.11, 4.56
245	V-8 245 @ 5000	300 @ 3800	283	3.87 x 3.00	9.5	2 4-bbl.	3.55	3.36	3.70, 4.11, 4.56
270	V-8 270 @ 6000	285 @ 4200	283	3.87 x 3.00	9.5	2 4-bbl.	---	3.36	3.70, 4.11, 4.56
CHRYSLER Newport	V-8 265 @ 4400	380 @ 2400	361	4.12 x 3.38	9.0	1 2-bbl.	2.93	3.58	---
Windsor	V-8 305 @ 4600	410 @ 2400	383	4.25 x 3.38	10.0	1 2-bbl.	2.93	3.58	---
New Yorker	V-8 350 @ 4600	470 @ 2800	413	4.18 x 3.75	10.1	1 4-bbl.	2.93	---	---
300-G	V-8 375 @ 5000	495 @ 2800	413	4.18 x 3.75	10.1	2 4-bbl.	3.23	3.23	---
DART Six	6 140 @ 4000	215 @ 2400	225	3.40 x 4.13	8.2	1 1-bbl.	3.31	3.54	3.58
V-8	V-8 230 @ 4400	340 @ 2400	318	3.91 x 3.31	9.0	1 2-bbl.	3.31	3.58	3.31
V-8 Power Pack	V-8 260 @ 4800	345 @ 3200	318	3.91 x 3.31	9.0	1 4-bbl.	2.93	---	3.31, 3.58
D-500	V-8 305 @ 4800	395 @ 3000	361	4.12 x 3.38	9.0	1 4-bbl.	NA	3.31	---
Police Special	V-8 325 @ 4600	425 @ 3200	383	4.25 x 3.38	10.0	2 4-bbl.	NA	3.31	---
D-500 w/Ram Induction	V-8 330 @ 4800	460 @ 2800	383	4.25 x 3.38	10.0	2 4-bbl.	NA	3.31	---
DODGE Polara V-8	V-8 265 @ 4400	380 @ 2400	361	4.12 x 3.38	9.0	1 2-bbl.	2.93	3.58	3.31
D-500	V-8 325 @ 4800	425 @ 3200	383	4.25 x 3.38	10.0	1 4-bbl.	3.23	3.23	---
D-500 w/Ram Induction	V-8 330 @ 4800	460 @ 2800	383	4.25 x 3.38	10.0	2 4-bbl.	3.23	3.23	---
DE SOTO	V-8 265 @ 4000	370 @ 2400	361	4.12 x 3.38	9.0	1 2-bbl.	2.93	3.58	---
FALCON 144	6 85 @ 4200	138 @ 2000	144	3.50 x 2.50	8.7	1 1-bbl.	3.50	3.10	---
170	6 101 @ 4400	156 @ 2400	170	3.50 x 2.94	8.7	1 1-bbl.	3.50	3.10	---
FORD Six	6 135 @ 4000	200 @ 2000	223	3.62 x 3.60	8.4	1 1-bbl.	3.56	3.56	3.89
292	V-8 175 @ 4200	279 @ 2200	292	3.75 x 3.30	8.8	1 2-bbl.	3.10	3.56	3.89
352	V-8 220 @ 4400	336 @ 2400	352	4.00 x 3.50	8.9	1 2-bbl.	2.91	3.56	3.10
390 Special	V-8 300 @ 4600	427 @ 2800	390	4.05 x 3.78	9.6	1 4-bbl.	2.91	3.56	3.10
390 Police Special	V-8 330 @ 5000	427 @ 3200	390	4.05 x 3.78	9.6	1 4-bbl.	NA	NA	---
390 Super	V-8 375 @ 6000	430 @ 3400	390	4.05 x 3.78	10.6	1 4-bbl.	NA	NA	---
IMPERIAL	V-8 350 @ 4600	470 @ 2800	413	4.18 x 3.75	10.1	1 4-bbl.	2.93	---	---
LANCER 170	6 101 @ 4400	155 @ 2500	170	3.40 x 3.13	8.2	1 1-bbl.	3.23	3.55	---
225	6 140 @ 4000	215 @ 2400	225	3.40 x 4.13	8.2	1 1-bbl.	3.23	3.55	---
LINCOLN CONTINENTAL	V-8 300 @ 4100	465 @ 2000	430	4.30 x 3.70	10.0	1 2-bbl.	2.89	---	---
MERCURY Six	6 135 @ 4000	200 @ 2000	223	3.62 x 3.60	8.4	1 1-bbl.	3.56	3.56	3.89
292	V-8 175 @ 4200	270 @ 2200	292	3.75 x 3.30	8.8	1 2-bbl.	2.91, 3.10	3.56	3.89
352	V-8 220 @ 4400	336 @ 2400	352	4.00 x 3.50	8.9	1 2-bbl.	2.91, 3.10	3.56	3.89
390	V-8 300 @ 4600	427 @ 2800	390	4.05 x 3.78	9.6	1 4-bbl.	2.91, 3.10	3.56	---
OLDSMOBILE F-85	V-8 155 @ 4800	210 @ 2800	215	3.50 x 2.80	8.8	1 2-bbl.	2.23	3.07	---
Dynamic 88	V-8 250 @ 4400	405 @ 2400	394	4.13 x 3.69	8.8	1 2-bbl.	3.27	3.42	---
Super 88, 98	V-8 325 @ 4600	435 @ 2800	394	4.13 x 3.69	10.0	1 4-bbl.	3.08, 3.23	3.42	---
PLYMOUTH Six	6 145 @ 4000	215 @ 2800	225	3.40 x 4.13	8.2	1 1-bbl.	3.31	3.54	---
Fury	V-8 230 @ 4400	340 @ 2400	318	3.91 x 3.31	9.0	1 2-bbl.	3.31	3.58	---
Super Fury	V-8 260 @ 4400	345 @ 2800	318	3.91 x 3.31	9.0	1 4-bbl.	2.93, 3.08	3.58	---
Golden Commando	V-8 305 @ 4800	395 @ 3300	361	4.12 x 3.38	9.0	1 4-bbl.	3.31	3.31	---
Sonoramic Commando	V-8 330 @ 4800	460 @ 2800	383	4.25 x 3.38	10.0	2 4-bbl.	3.31	3.31	---
PONTIAC Tempest	4 110 @ 3800	190 @ 2000	194.5	4.06 x 3.75	8.6	1 1-bbl.	---	3.55	3.31, 3.73
Tempest w/Hydramatic	4 130 @ 4400	195 @ 2200	194.5	4.06 x 3.75	8.6	1 1-bbl.	3.08	---	3.31
Tempest Premium Fuel	4 120 @ 3800	202 @ 2000	194.5	4.06 x 3.75	10.25	1 1-bbl.	---	3.31	3.55
Tempest Premium Fuel w/Hydramatic	4 140 @ 4400	207 @ 2200	194.5	4.06 x 3.75	10.25	1 1-bbl.	3.08	---	3.55
Tempest w/4-bbl	4 155 @ 4800	215 @ 2800	194.5	4.06 x 3.75	10.25	1 4-bbl.	3.55	---	3.31, 3.73
Tempest V-8	V-8 155 @ 4600	220 @ 2400	215	3.20 x 2.80	8.8	1 2-bbl.	3.55	---	3.31, 3.73
PONTIAC Catalina, Ventura, Star Chief	V-8 215 @ 3600	390 @ 2000	389	4.06 x 3.75	8.6	1 2-bbl.	---	3.23	3.08, 3.42
Bonneville (optional other series)	V-8 235 @ 3600	402 @ 2000	389	4.06 x 3.75	8.6	1 4-bbl.	---	3.23	3.08, 3.42
Catalina, Ventura w/Hydramatic	V-8 267 @ 4200	405 @ 2400	389	4.06 x 3.75	10.25	1 2-bbl.	2.69, 2.87	---	3.08
Catalina, Ventura w/Hydramatic (opt)	V-8 287 @ 4400	417 @ 2400	389	4.06 x 3.75	10.25	1 4-bbl.	2.69, 2.87	---	2.56, 3.08
Star Chief w/Hydramatic	V-8 283 @ 4400	413 @ 2800	389	4.06 x 3.75	10.25	1 2-bbl.	2.87	---	2.69, 3.08
Bonneville w/Hydramatic	V-8 303 @ 4600	425 @ 2800	389	4.06 x 3.75	10.25	1 4-bbl.	2.87	---	2.69, 3.08
All series w/Hydramatic (optional)	V-8 230 @ 4000	380 @ 2000	389	4.06 x 3.75	8.6	1 2-bbl.	2.56	---	2.87
All series (optional)	V-8 318 @ 4600	430 @ 3200	389	4.06 x 3.75	10.75	3 2-bbl.	3.23	2.87	2.69, 3.08, 3.42
All series (optional)	V-8 333 @ 4800	425 @ 2800	389	4.06 x 3.75	10.75	1 4-bbl.	3.42	3.08	3.64
All series (optional)	V-8 348 @ 4800	430 @ 3200	389	4.06 x 3.75	10.75	3 2-bbl.	3.42	3.08	3.64
RAMBLER American Deluxe, Super	6 90 @ 3800	160 @ 1600	195	3.13 x 4.25	8.0	1 1-bbl.	3.31	3.31	3.78, 4.11
American Custom	6 125 @ 4200	180 @ 1600	195	3.13 x 4.25	8.7	1 1-bbl.	2.87	3.31	3.78
Classic Six	6 127 @ 4200	180 @ 1600	195	3.13 x 4.25	8.7	1 1-bbl.	3.31	3.78	4.11, 4.38
Classic V-8	V-8 200 @ 4900	245 @ 2500	250	3.50 x 3.25	8.7	1 2-bbl.	3.15	4.10	3.55, 4.44
Classic V-8 Power Pack	V-8 215 @ 4900	260 @ 2500	250	3.50 x 3.25	8.7	1 4-bbl.	3.15	4.10	3.55, 4.44
Ambassador	V-8 250 @ 4700	340 @ 2600	327	4.00 x 3.25	8.7	1 2-bbl.	2.87	3.54	3.15, 4.10
Ambassador Power Pack	V-8 270 @ 4700	360 @ 2600	327	4.00 x 3.25	9.7	1 4-bbl.	3.15	3.54	2.87, 4.10
STUDEBAKER Lark Six	6 112 @ 4500	154 @ 2000	169	3.00 x 4.00	8.5	1 1-bbl.	3.73	3.73	3.54, 4.10, 4.56
Lark V-8	V-8 180 @ 4500	260 @ 2800	259	3.60 x 3.25	8.8	1 2-bbl.	3.07	3.07	3.31, 3.54
Lark V-8 Power Pack	V-8 195 @ 4500	265 @ 3000	259	3.60 x 3.25	8.8	1 4-bbl.	3.07	3.07	3.31, 3.54
Hawk V-8	V-8 210 @ 4500	300 @ 2800	289	3.60 x 3.60	8.8	1 2-bbl.	3.07	3.31	3.54
Hawk V-8 Power Pack	V-8 225 @ 4500	305 @ 3000	289	3.60 x 3.60	8.8	1 4-bbl.	3.07	3.31	3.54
THUNDERBIRD	V-8 300 @ 4600	427 @ 2800	390	4.05 x 3.78	9.6	1 4-bbl.	3.00	---	---
VALIANT	6 101 @ 4400	155 @ 2500	170	3.40 x 3.13	8.2	1 1-bbl.	3.23	3.55	---



## THE STORY BEHIND THE SPECIFICATIONS

This particular figure is regarded as critical because, in some areas, vehicles that exceed it are supposed to be fitted with special truck-type running lights to indicate their width. Fortunately, such laws have not been enforced too literally!

Just as the Imperial is the longest and widest car, the Corvair is the narrowest, 67 inches, and lowest, 51.5 inches. There is relatively little room for variation in height, the tallest of the new cars being the Cadillac 75 at 59.1 inches. Not a single make is above the five-foot mark which, just a few years ago, was considered the lowest practical limit.

The 50-inch spread in wheelbase between the Rambler American and Cadillac 75 is not as great as their difference in length because of the proportionately shorter overhang of the smaller car. Actually, wheelbase and length are not always in direct ratio. The Rambler Classic and Studebaker Lark differ only half an inch in hub-to-hub distance, but the Classic is nearly 15 inches longer overall.

A glance at the tread figures shows the validity of Pontiac's "wide track" claim. The make does have the broadest stance in the industry. Another GM product, the Corvair, has the narrowest.

Pontiac and Rambler share an interesting distinction that shows up in tire size. Their smallest versions, the Tempest and American, respectively, have larger wheels than their senior series. Lincoln's 9.00 x 14 tires certainly take the title for the industry's fattest.

Road clearance can be a critical factor for those who travel in rough country. The variation among the 1961 models is only two inches, but this can be enough to make the difference between getting through and getting stuck.

The turning circle is the tightest diameter the front wheels can navigate. Logically, it would seem to be related to the car's wheelbase and tread, but this is not necessarily the case. The Lincoln Continental and Cadillac 60 and 62 provide an interesting example. The Lincoln's wheelbase is 6.5 inches less than the Cadillac's and the tread is approximately the same, yet the Lincoln has a 3.7-foot larger turning circle.

This particular specification clearly shows the maneuvering advantage of the compacts. Almost all of them will turn within a 40-foot circle, a figure none of the big cars can equal.

For some reason, shipping weight is always one of the most difficult things to get from car makers during the earlier part of the season. Perhaps they have to start shipping cars before they can determine what they weigh! Chrysler Corporation has been particularly negligent this season.

With the listing incomplete, the Lincoln Continental is the tentative heavyweight champ at 4771 pounds. However, Cadillac and Imperial should tip the scales in the same vicinity. None of the missing figures will affect the Falcon's place as the lightest new car, 2315 pounds.

The interior dimensions reveal another important difference between the compacts and big cars. Both average about the same in head- and legroom but the juniors have a distinct disadvantage in hiproom. There are some exceptions; in its front seat, the Rambler Classic has a tenth of an inch more space for hips than the Lincoln Continental!

That suggests some of the information that can be gleaned from the body and chassis specifications. The engine and gearing chart presents even more of a challenge. To the best of MT's knowledge, it is the most complete listing of its kind published anywhere.

Readers who have studied the charts in the November and December issues will notice that several new engines have been added this month: the 98-hp Corvair, 305-, 325- and 330-hp Dodges, 330- and 375-hp Fords and 270-hp Rambler Ambassador. This will be a continuing policy. As other manu-

facturers release details on similar performance options, they will be added to the list.

It should be emphasized that these are factory *installed* options. Several makes have factory *authorized* equipment which is actually fitted to the car by the dealer. A good example is the Valiant-Lancer Hyper-Pak, approved by Plymouth and Dodge but sold through Chrysler's Mopar parts division.

Checking the extremes in engines, the new 375-hp Ford rivals the Chrysler 300-G as America's most powerful car. The Corvair, at 80 hp, is the weakling of the year. In displacement, the 430-cubic-inch Lincoln is still the biggest while the Falcon and Comet split minimum honors at 144 cubic inches.

The engine and gearing specifications involve some particular problems.

Buick, Chrysler, Oldsmobile, Rambler and Studebaker all list specific engines for each of their series. As they say in short-order kitchens, "No substitutions, please." Other manufacturers generally supply any optional engine a customer wants in any series. The 335-hp Chevy V-8, for example, is available in the Biscayne, Bel Air or Impala.

Pontiac mixes the two policies. With the most dazzling array of optional powerplants in the industry, the Big Chief restricts some to particular series yet offers others throughout the line.

All this creates problems in engine nomenclature. In cars with close engine-series relationships, the same name can be used for both. Note the Chrysler listing. But those with an "across the board" policy have separate designations for their engines. Unfortunately, they aren't all consistent. Ford and Mercury list their V-8's according to displacement. This won't work for Chevrolet, which has only two V-8 sizes but seven horsepower ratings.

To really complicate matters, Chrysler Corporation sometimes uses the same name for an engine as for a series. A case in point is the Plymouth Fury V-8, which is just as readily available in the Savoy and Belvedere as in the Fury.

Pontiac's fantastic group of engines deserves a closer look. Counting both the Tempest and the senior series, there is a total of 16. Yet, as the displacement figures reveal, they are based on only three blocks. And one of these is the aluminum V-8 borrowed for the Tempest from Buick. So only two are really Pontiac products. But both of these, the Tempest Four and the big V-8, have the same cylinder dimensions. One is simply half of the other!

In a broad sense, Pontiac has only one basic engine design, yet fields 16 horsepower ratings. A neat trick!

The principal way it is accomplished is with variations in three important specifications — compression ratio, carburetion and valve timing. The first two of these are included in MT's listings but there is no way of showing the third clearly on a relatively concise chart.

Besides, an engine's output figures usually give a strong indication of its valve timing. The two Tempest premium fuel units show just how. Each has a 10.25-to-1 compression ratio and a single-barrel carburetor. Nowhere in their basic specifications is there an apparent difference. Yet one develops 120 hp at 3800 rpm, and the other 140 hp at 4400 rpm. The latter is obviously getting more air-fuel mixture at a higher engine speed. The logical conclusion? Longer valve timing.

The information hidden in a specifications listing like MT's goes on and on. It involves far more than the bare technical facts about the individual cars.

Comparisons and conclusions can be drawn ad infinitum. These informal remarks have been meant to show what some of them are and to stimulate interest in finding others. The charts are intended primarily for reference, but they can be the subject of some fascinating explorations and speculations as well.

/MT

## Road Test



**I**F THE DATSUN ENGINEERS had an overall concept about the Bluebird, nothing could better describe it than: "An automobile's most essential quality is to provide basic transportation." The Bluebird does not have the best steering, best handling, best ride, best economy, nor is it the most powerful. But the Japanese-made car is an excellent compromise of all these qualities into a well-rounded, rugged automobile at low cost.

Perhaps the Bluebird's most important singular quality is that despite its short overall length, less than 12½ feet, it more than qualifies as a four-passenger car with ample room for each person. In the back seat the generous head and legroom are a

*Interior space is generous and a little surprising considering the Bluebird's small exterior dimensions. Relatively wide doors make entry and exit easy.*

little unexpected in a car in this size classification and can undoubtedly be traced to the fact that in Japan the Datsun is one of the most popular taxicabs.

Inside the passenger compartment the finish materials and upholstery have evidently been selected more for their durability than their beauty. This is not to imply, however, that the interior has been cheapened. Actually the materials are both serviceable and tasteful, and detail workmanship in fitting and finishing is above average. The dash panel is metal with a baked enamel finish, and the instrument panel is equally unpretentious. Instruments are at a minimum but include all essentials: speedometer, odometer, heat and fuel gauges, plus warning lights for oil pressure and generator.

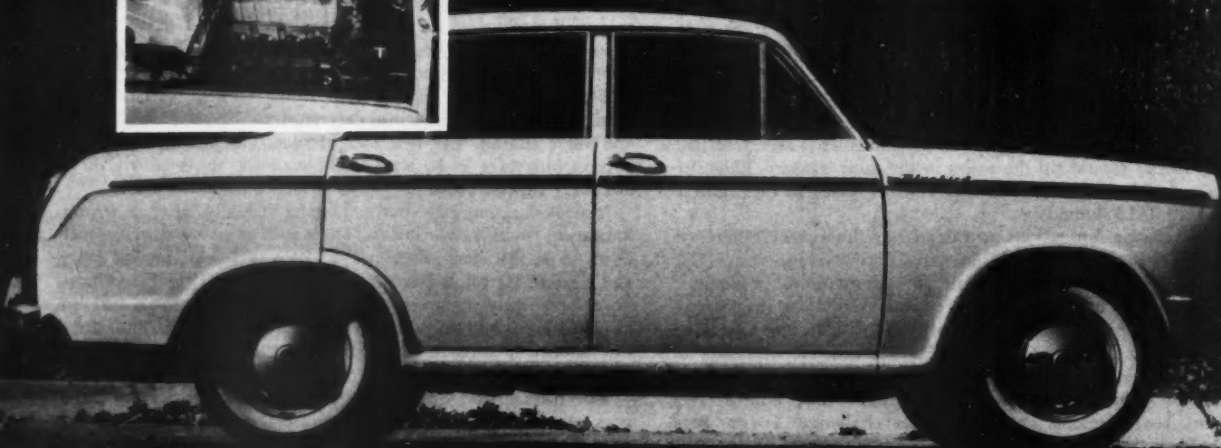
Outside, the bodywork shows the same detail quality with a few obvious exceptions. One is the seam where the front quarter panel is welded to the body. Granted that this method of attaching fenders to the body is excellent in case of body repairs, since the entire unit can be replaced quickly and at relatively small cost. But it would seem more fitting if a little finesse had been used in concealing the seam.

Beneath the hood the Bluebird's engine compartment is conventional, yet neat and practical. Everything is laid out to make servicing the engine, or other mechanical parts, simple. For example, both the brake and clutch are hydraulic and the master tanks are mounted on the firewall, where they will be easily accessible.

One unit under the hood, the voltage regulator, is worthy of note. The Datsun's regulator uses a carbon pile instead of the



## DATSUN BLUEBIRD



AN IMPORT FROM THE ORIENT THAT'S RUGGED AND ROOMY

more conventional system. The current goes into a coil, creating a magnetic field which compresses the carbon pile. This causes excess current to go to ground. There are no contacts except the cutout and there is nothing to get out of order. The carbon pile regulator is not new but could easily be a feature that will be found on more cars in the future. One big advantage is that there is little to get out of order, and the unit should have an extremely long life — perhaps even as long as the life of the car itself.

The Datsun's powerplant is a 72.5-cubic-inch ohv four-cylinder engine which produces 48 hp at 4800 rpm and 60.7 lbs.-ft. of torque at 2400 rpm. The transmission is a three-speed manual with a rear axle ratio of 4.625-to-1.

Taking the above engineering specifications into consideration, the Bluebird's overall performance is a little easier to analyze. Around town and in heavy traffic the car has adequate performance and good lugging capabilities even in high gear. The gears are well spaced and are apparently selected to give the car low-end acceleration. The shift lever is one of the few column-mounted units found on imports that are reasonably precise and firm. The high numerical rear axle ratio is, of course, a good choice for low-end performance but limits the car for higher speeds. Although the Bluebird is capable of well over legal limits, the practical top on speed is around 60 mph.

Economy is a little below average for small imports but is not low enough to make any important difference on an annual gas bill. What is significant is that stop-and-go traffic driving does not seem to affect the economy to any extent.

The steering is light, precise and extremely fast. The 16-foot-radius turning circle is excellent for darting in and out of traffic and squeezing into tiny parking spaces too small for most other cars.

Along with its fast steering the Bluebird also has good cornering ability. It will take the sharpest turns almost flat and with little tire squeal. Since the suspension is fairly conventional — coil springs and A-frame in front, semi-elliptical in back, and shock absorbers all around — the answer is stiffer suspension.

Unfortunately the stiff springs, especially in back, result in a ride that is moderately uncomfortable over bumpy roads. MOTOR TREND has encountered few harder-riding cars on such roads and even on a freeway the Bluebird chops harshly almost continuously over the joints in the concrete. While most small imports will compensate for this harshness with two persons aboard, the Datsun changes its ride little unless four are seated. Of course, the stiffer springs have their advantages — one is extremely long life on back roads.

The stiff suspension is also a limiting factor which contributes to keeping the Datsun's top speed unusable. The car is fairly smooth until the speedometer reaches around 65 mph, and then a steady vibration — due partly to the stiffer springs and partly to the high rpm of the engine — is transmitted to the driver through the steering wheel. This situation is not as acute when four persons are aboard but is still noticeable.

Tracing the Datsun's overall character as an automobile, it is easy to see just how much the car has been influenced by the taxi market. It would be difficult to find a better car for traffic, parking and short trips. On the other hand, it is somewhat less adaptable to long, high-speed trips. But the Bluebird is also extremely rugged and should have a long life where heavier-than-average loads for a small car are hauled over roads that are unimproved or in bad shape.

The Datsun Bluebird is a notable example of a car which presents little but the apparently commonplace in its overall engineering, yet produces commendable results. /MT

*Fairly conventional and practical front-engine layout makes the ohv four-cylinder engine and nearly all components of the powerplant accessible.*



### Test Car

TEST CAR: Datsun Bluebird  
BODY TYPE: 4-door sedan  
BASE PRICE: \$1616 P.O.E.

### Maneuverability Factors

OVERALL LENGTH: 153.9 inches  
OVERALL WIDTH: 58.9 inches  
OVERALL HEIGHT: 57.5 inches  
WHEELBASE: 89.8 inches  
TREAD, FRONT/REAR: 47.6 and 47 inches  
TEST WEIGHT: 2000 lbs.  
WEIGHT DISTRIBUTION: 57 per cent on front wheels  
STEERING: 3¼ turns lock-to-lock  
TURNING CIRCLE: 32 feet curb-to-curb  
GROUND CLEARANCE: 7.2 inches

### Interior Room

SEATING CAPACITY: Four  
FRONT SEAT  
HEADROOM: 39.1 inches  
WIDTH: 42.8 inches  
LEGROOM: 44.3 inches

### Engine & Drive Train

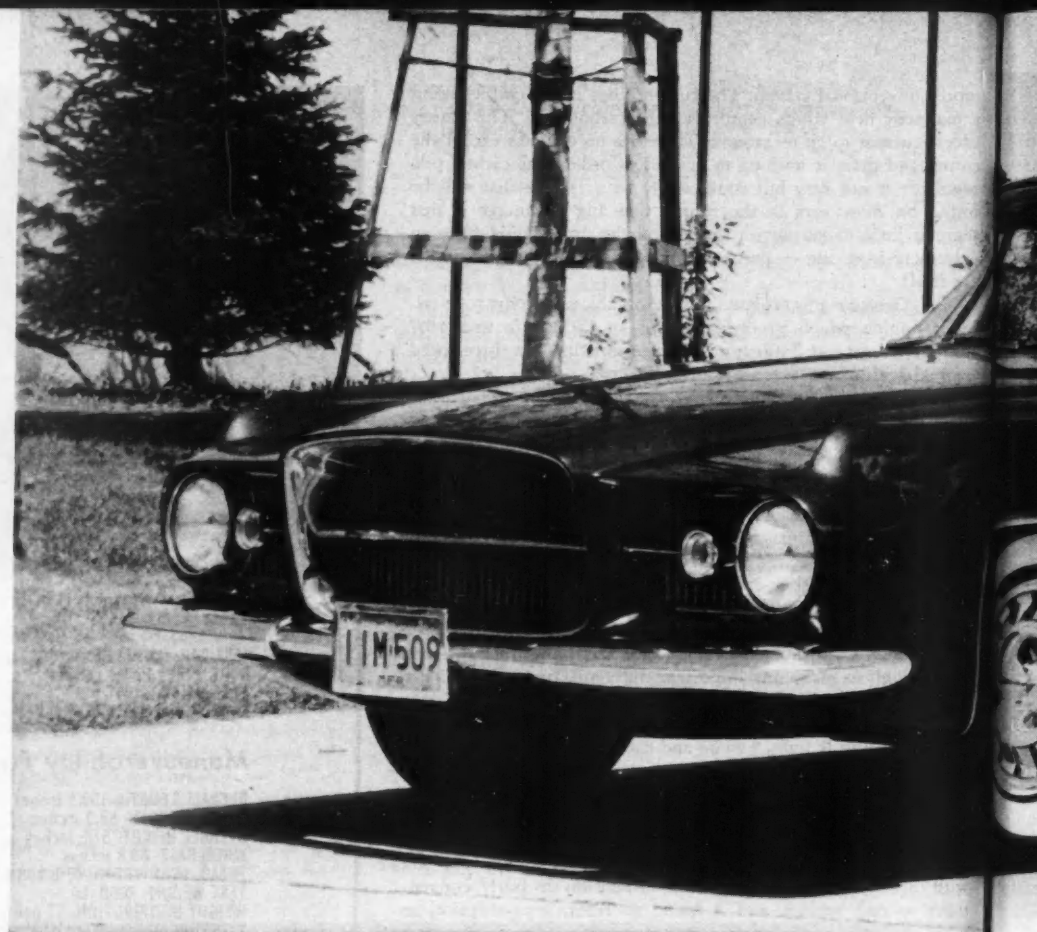
TYPE: Ohv four-cylinder  
DISPLACEMENT: 72.5 cubic inches  
BORE & STROKE: 2.85 x 2.79  
COMPRESSION RATIO: 7.5-to-1  
CARBURETION: Single-throat  
HORSEPOWER: 48 @ 4800 rpm  
TORQUE: 60.7 @ 2400 rpm  
TRANSMISSION: Three-speed manual  
REAR AXLE RATIO: 4.625

### Performance

GAS MILEAGE: 19 to 23 miles per gallon  
ACCELERATION: 0-30 mph in 7.5 seconds, 0-45 mph in 16.5 seconds, and 0-60 mph in 27.5 seconds  
SPEEDOMETER ERROR: Indicated 30, 45, and 60 mph are actual 31, 46 and 61 mph respectively  
ODOMETER ERROR: Indicated 100 miles traveled is actual 98.5 miles traveled  
WEIGHT-POWER RATIO: 41.7 lbs. per horsepower  
HORSEPOWER PER CUBIC INCH: .662



# WELCOME TO THE



# DUAL-GHIA



*Besides dropping the name "Dual," the Ghia L6.4 has many other changes, including new styling, power train and a completely redesigned passenger compartment.*



*Focal point of the completely restyled driver controls is the impressive instrument panel and console that drops onto transmission hump.*

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POWER TRAIN AND RUNNING GEAR FOR 1961 GHIA ARE AMERICAN-MADE, WHILE BODYWORK AND FINISHED ASSEMBLY ARE DONE IN ITALY.

## There's a new shape for this prestige car that blends U.S. components, Italian styling

**T**HE LONG-AWAITED SUCCESSOR to the Dual-Ghia was introduced this fall in Paris. Since Dual Motors of Detroit no longer assembles the car, the name Dual has been dropped and the car will be known as the Ghia L6.4. Dual Motors will continue to represent the Ghia plant in this country. The new car, a hardtop body style, is restyled, has a different power train and redesigned interior. However, the original theme, a luxurious car with American mechanical components is still the same.

First of all, the car is now produced entirely at the Carrozzeria Ghia plant in Torino, Italy. Instead of shipping completed bodies to this country and assembling them here, power train and chassis components are sent to Italy.

The Ghia L6.4 hardtop has a wheelbase of 115 inches, is 210 inches long, 75 inches wide and 52 inches high. Shipping weight is 4000 pounds dry.

The mechanical components are still provided by Chrysler, although they are different from those used in the Dual-Ghia. The engine is Chrysler Corporation's 383-cubic-inch V-8 with a bore and stroke of 4.25 x 3.38 inches. The power ratings of the powerplant, as Ghia will offer it, will be 335 hp at 4600 rpm and 410 lbs.-ft. of torque at 2400 rpm. The transmission will be

Chrysler's Torqueflite automatic, and the rear axle ratio is 3.23-to-1. Steering is Chrysler's full-time power unit as are the 12-inch power brakes. Even the suspension is built from Chrysler Corporation's standard parts and uses torsion bar springing in front and semi-elliptical leaf springs in the rear.

With this combination the Ghia L6.4 should be a good performer and handle well in corners and on the open road. The rear axle ratio choice shows a little sacrifice of economy for better performance. Of course, for American buyers there is another advantage, that of being able to have the car repaired and serviced at any Chrysler Corporation dealer.

Inside, the car has been extensively restyled and has a new, impressive instrument panel with a console that drops and curves onto the transmission hump.

Since the mechanical parts are available on several American cars, the Ghia L6.4 is different primarily because of its styling, luxurious interior, craftsmanship and painstaking attention to details. The entire body will be handbuilt and assembled.

It is also plain that the Ghia plant is not out to break any production record. By January of 1961 they expect to have six cars finished, of which one will be a show car and another a demonstration model for prospective buyers of the other four. Then the factory will swing into full production at the rate of five finished cars per month.

And along with its other changes the Ghia L6.4 has a slight increase in price. The original Dual-Ghia sold for \$7646; the new price tag is somewhere around \$15,000. Since there are likely to be more persons with the price than there are Ghia L6.4's, there will surely be other qualifications for purchase than merely money. The new Ghia may well be a prestige car that picks its own buyers on their prestige.

/MT

## Road Test



# 1961 VOLKSWAGEN

**T**HE 1961 VOLKSWAGEN SEDAN provides the kind of happy surprise that comes when an excellent motor car is made even better, and inclusion of the rugged, higher-horsepower transporter engine in this new Volkswagen provides a real surprise, even to long-time owners of previous models of this marque. Four more horsepower at first seem like just too little to talk about, but the boost from 36 hp at 3700 rpm to today's output of 40 hp at 3900 revs makes a world of difference in this 1631-pound (dry weight) automobile.

Much of this new feel comes from a torque increase to 64 pounds-feet at 2400 revs. Immediate advantage is a cruising range of 70 mph, in which the whole car is completely at home. An initial drive found the car purring at 70 on a freeway in a completely effortless bit of acceleration. The second big bonus for '61, of course, is a four-speed fully synchromesh transmission, a feature rarely found on vehicles of this price category.

A person who has not driven a Volkswagen of vintage more recent than, say, 1955, will have difficulty in realizing this is the same automobile, although the familiar beetle-bug appearance is unchanged. The Wolfsburg factory will make much capital out of what they call 27 changes in the new car, although many of these are even more miniscule than some of the vaunted "improvements" of Detroit products.

The more obvious ones include an automatic choke (which may irritate many rabid fans of this marque who prefer to do



*Most changes in the 1961 Volkswagen will have to be pointed out to those not familiar with the car. Besides the automatic choke there are 26 others.*



## amazing results from seemingly minor changes

everything for themselves), an anti-icing carburetor heater, valuable to those owners in colder climates, a re-designed fuel tank for more under-hood luggage space and a gas tank outside vent, which keeps the heady odor of petrol out of the cab. Other changes involve a sheath for the gas pedal cable, a concave washer on the third gear drive pinion to quiet transmission noise and softer mounting of the transmission. There is a transparent brake fluid reservoir for easy checking, a grab bar for the front seat passenger a la MG and inclusion of windshield washers as standard equipment, a typical little VW bonus item.

As interesting a gadget as has ever been found on these gadget-free cars is a queer kind of ignition switch which keeps you from jamming the starter into action when the engine is running. The company says this is required because the engine is now so quiet there's an inclination to try and re-start it because you can't hear it idling. It is necessary to return the switch key fully to the "off-lock" position before you can re-engage the starter. This may cause some little early confusion when re-starting a stalled engine in heavy traffic, but is a worthwhile item for anyone who has ever mistakenly torn the teeth off a starter ring gear.

All electrical connections are now the push-on or plug-in type — a sensible feature — and the fuse box is now located below the instrument panel, just to the right of the steering column — another sensible idea that recalls Porsche practice in this respect. Other changes for '61 include a sun visor for the previously blinded front passenger, a quieter air intake pipe, new paint colors, running board colors keyed to paint, a similar color option in front floor mats, a new leatherette upholstery

material with a pronounced quality "feel," harmonizing fender bead colors, a colored steering wheel, a 0-90-mph speedo (which was dead accurate on our car), a very minor change in the door key slot and a relocation of the lamp dimmer switch to keep from punching it accidentally with the clutch foot.

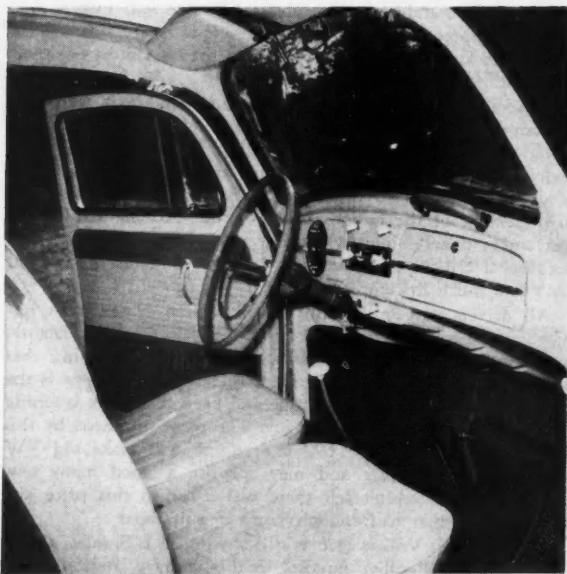
As to mechanical change in the engine compartment, this is basically the transporter powerplant with heavier, more rugged case and very slight re-design of parts in many, many areas. Obvious visible changes include the air cleaner with pre-heating duct, the new carb, employing automatic choke, a new fuel pump, a new distributor on which the ignition spark advance is controlled by vacuum only, and a generator support which is detachable from the block, and not subject, therefore, to casting fractures, which have provided owners with a nasty job of engine case welding.

Silence is one big feature of the new powerplant and another, strangely enough with added horsepower, is better economy in the middle speed range. Three different drivers on this test all found gas mileage in the excellent zone of 28-32 mpg, which is all the factory claims and then some. On other performance items, the factory again seems to be on the low side with top speed. The checked-out speedometer went briskly up to 75 mph, and might have gone higher, although the factory rates this car with a 72-mph maximum and cruising speed. Car weight is unchanged from last year, and gas mileage might drop off a trifle at day-long flat-out cruising.

Everyone who drove the car liked the transmission, although on the new vehicle the shift down into low gear was a trifle stiff. The engine, as always, revs happily in all gears, and 0-60



Front luggage space has been increased as a bonus from the re-designed gas tank. However, overall storage capacity is still comparatively limited.



Few obvious changes have altered the appearance of the dash panel. One thing that is new, however, is the grab bar near the upper right panel.

acceleration times of 22 seconds seem excellent for this kind of powerplant and car weight.

On the issue of handling, this VW, which has the front sway bar improvement found on the '60 model and adapted from the Karmann-Ghia sway bar, is excellent in most cases. There is still annoying sway from side winds, even the sudden small breezes one encounters from passing trucks or changing terrain on turnpikes. The car is still an oversteerer and will break loose on hard cornering. But the '61 seems to give even more warning than the already-improved 1960 version, and anyone who wants to drive full-out and has the slightest seat-of-the-pants feeling will feel perfectly fine in very fast bends.

The steering itself feels better than ever, is still very fast, with 2.4 turns lock-to-lock, but no one could complain about operation of the steering mechanism this year. There has been a change in the steering gear box, and a shock absorber has been added to the steering system to take shock and wheel fight away. With all these statistics and data, the car still has not been adequately described, and all three drivers in this test were unanimous in that it proved an absolute tiger, size and horsepower considered.

The difference in the transmission shift points, coupled with the synchro low plus the added horsepower and a much more solid "feel" about the whole car which cannot quite be explained by the specifications, all add up to an almost completely new performance identity to this automobile. The new transmission gearing enables good lugging qualities in second gear and actually lessens the need for a synchromesh low gear, although the fact that you can pull out of low gear in a hurry for a satisfying spurt under trying traffic conditions is a real life saver in any small-engined machine.

All drivers on this test agreed that the current vehicle is excellent in riding qualities, with smoothness possible with a single person in the car, whereas many competitor cars in this area require the weight of at least two persons for a really ideal ride.

In the category of adverse criticism, there were still complaints about the small overall amount of luggage space, although this has been improved by the re-designed fuel tank and the factory now lists front luggage space as increased from a former three cubic feet to a present five cubic feet. This added to space computed behind the rear seat gives a total luggage-carrying space of nine cubic feet.

Other long-standing peeves about VW are still unresolved. There is still no fuel gauge, the rear windows are still sealed, vision isn't as good as it might be and there's almost no knee room for rear seat passengers.

Drivers were divided on ease of entry and exit, and one six-foot-three tester found no discomfort relating to his height, in either getting in or out or in riding. Seat design was generally held to be good, and comfort for front seat passengers beyond criticism. Two out of three drivers objected violently to placement of the radio speaker on the extreme left of the instrument panel — and when placement of the radio speaker becomes a critical thing with car testers, you must know you can't find much to complain about.

All drivers agreed that this 1961 version is the most improved single model to be produced by the German factory, which was far ahead of anyone in Detroit in deciding that annual model changes must go, and steady improvement is the proper way to protect resale value and keep customers laughing and scratching with boundless joy. The scoot produced by this little 72.74-cubic-inch (1192 cc) engine will make old VW admirers even happier and may surprise a good many new customers who haven't felt there was a car in this price and size category that had enough jump to suit them.

The fact that Volkswagen is still soaring in U.S. sales, almost alone among all other imports to this country, indicates that the best road testers of all — the public who pays the price to drive the car — has already rendered an overwhelming "yes" vote on the ubiquitous little Volkswagen.

/MT



## Test Car

TEST CAR: Volkswagen  
BODY TYPE: 4-door sedan  
BASE PRICE: \$1665 P.O.E.

## Maneuverability Factors

OVERALL LENGTH: 160.6 inches  
OVERALL WIDTH: 60.6 inches  
OVERALL HEIGHT: 59.1 inches  
WHEELBASE: 94.5 inches  
TREAD, FRONT/REAR: 51.4 and 50.7 inches  
DRY WEIGHT: 1631 lbs.  
STEERING: 2.4 turns lock-to-lock  
TURNING CIRCLE: 36 feet curb-to-curb  
GROUND CLEARANCE: 7.2 inches

## Interior Room

SEATING CAPACITY: Four  
FRONT SEAT  
HEADROOM: 36 inches  
WIDTH: 48 inches  
LEGROOM: 43 inches  
TRUNK CAPACITY: 9 cubic feet

## Engine and Drive Train

TYPE: 4-cyl. horizon-opposed  
DISPLACEMENT: 72.74 cubic inches (1192 cc)  
BORE & STROKE: 3.03 x 2.52  
COMPRESSION RATIO: 7-to-1  
CARBURETION: Single-throat Solex  
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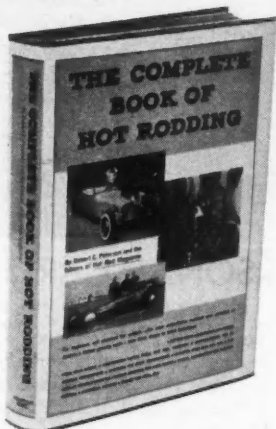
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of the latest foreign  
car news from our  
overseas correspondents



Gordon Wilkins



Gunther Molter

## AROUND THE WORLD IN 30 DAYS

**REDUCED SALES** in the United States, caused by the introduction of the American compacts, are blamed for production cuts in the European automobile industry. In England, the situation is hurt further by restrictions of credit.

Standard Triumph, for instance, reports the dismissal of 700 of its 1300 workers at the Mulliner subsidiary, which makes body panels for Triumph Herald and Triumph sports models. Hundreds of workers in other factories will go on short time, some doing only a 2½-day week, with the resultant smaller paycheck.

On the Continent, both Renault and Simca have felt the pinch on exports and have cut the price in the home market. Big obstacle in the expansion of the home market is the high tax on fuel. In Germany, Borgward and Goggomobil have both cut production, but in general the home market is buoyant. Volvo and Saab in Sweden have increased their production at the expense of imports.

**DESPITE THE SLUGGISHNESS** of the general world auto market, manufacturers are optimistic and plan new models and styles to recapture the hearts and pocketbooks of the car buyer.

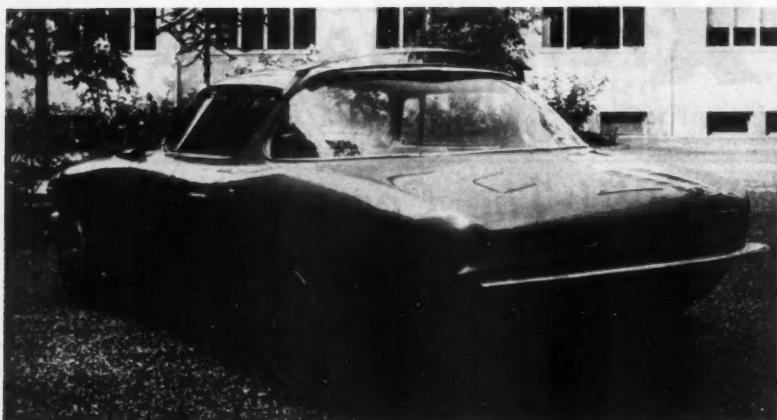
Standard Triumph has added a brand-new model — the Vignale Vanguard to its 1961 line. Powered by a new six-cylinder 1998 cc Standard engine, the Michelotti-styled Vignale develops 80 horsepower and has a top speed of 90 miles per hour. A four-speed transmission is standard while optional gear includes a three-speed box, Laycock overdrive and Borg-Warner automatic transmission. Special attention has been given to the interior with the accent on more luxury. It is available as a sedan for \$2010 or six-passenger estate wagon at \$2240. In addition to the six-cylinder model, Standard Triumph has also continued with improvements with its other cars at no increase in price.

**DURING THE AUTUMN** motor shows, BMC unveiled two new station wagons — the Austin Seven Traveller and Morris Mini-

Traveller. Both are based on a long-wheelbase version of the transverse-engined baby car and the Austin A-55 Countryman and the Morris Oxford Traveller. The small wagons have wood framing added as a decoration to the rear half of the body and twin rear doors and provide 18¾ cubic feet behind the four

seats or 35½ cubic feet with the rear seat folded.

Although basically unchanged, other BMC models have improved in detail. Body sealing has been improved on both the Mini-Minor and Austin Seven, and interior trim is re-designed with padding on the doors and instrument panel to re-



### LOEWY'S LATEST PERSONAL CAR

When a famous automotive designer shapes a new body shell to match his personal tastes, enthusiasts the world over must take notice. Here is the new private car of Raymond Loewy, one of the foremost U.S. industrial designers whose styling of the 1953 Studebaker is generally considered a classic of the modern school.

Using a Lancia Flaminia chassis, Loewy has let the principles of aerodynamics dictate his shape. The frame of the radiator grille is used as a bumper, and the body is cut away to allow free air flow to the front brakes.

A large, movable airfoil sectioned

like an aircraft wing is mounted on the roof to reduce airflow turbulence which forms at the rear end and has a braking effect at high speeds.





duce noise. New latches are fitted to the windows in the front doors which will not work loose, the power unit and clutch have been improved in detail and there are stronger attachments for the front and rear shock absorbers.

**FOR THE FIRST TIME** since 1928, cars will be made in Scotland. The Rootes Group announced the construction of a new plant at Linwood, Scotland, and the production of an entirely new Hillman car—smaller than the present Minx. Production in the \$25 million factory will commence within two years, Rootes officials said. An output rate of 150,000 cars annually is planned initially, and it is expected that this will be further expanded. The car has been designed to suit export conditions and overseas sales of at least 50 per cent of production are planned.

**JAGUAR CARS** plans to continue its Mark IX, Mark II and the XR-150 series during 1961 in the light of record-breaking sales during the past year. The firm will enlarge its range of metallic colors and introduce a new, power steering option on the Mark II models. The Burman power-assisted steering mechanism is entirely contained within the steering box—apart from the engine-driven hydraulic pump and reservoir—and is said to provide light steering without loss of sensitivity.

**AFTER AN ABSENCE** of several years, the Lea Francis Lynx roadster has re-appeared.



*Powered by a new six-cylinder engine, the 1961 Standard Triumph Vignale Vanguard is externally identical to the four-cylinder series except for the word Six below the nameplate directly above the grille.*

Powered by a Ford Zephyr six-cylinder engine of 2½ liters, the first model is a two-seater with two occasional seats in the rear. It has a tubular chassis of ladder form with front bridge members to carry the wishbones for the independent torsion bar suspension. Shock absorbers are telescopic at front, piston-type at the rear.

The engine has three SU semi-down-draft carburetors and a compression ratio of 7.8-to-1. The clutch is hydraulically operated and the gearbox has four speeds with synchromesh on the top three. Over-



*The Lea Francis Lynx was reintroduced this month after an absence of several years. The roadster is powered by a six-cylinder 2½-liter Ford Zephyr engine. Planned for U.S. import, it has tubular chassis and torsion bar suspension.*

drive is standard equipment. Steering is by rack and pinion, and brakes are Dunlop discs on all four wheels. Tires are 5.90 x 15 on perforated disc wheels. The rear axle has hypoid gears with a ratio of 4.1-to-1 and is carried on semi-elliptic springs. The Lynx is expected to be imported in the U.S.

**FOR 1961**, the Fiat 600 will be available with a bigger engine of 767 cc, which raises the power from 24 to 29 hp. The gearbox has been strengthened and axle ratio has been changed to 4.88-to-1, giving a top speed of up to 69 mph. Only external identification for the big-engined model is the addition of pivoted ventilating panes in the front doors.

**INTRODUCTION** of a Rolls-Royce automatic transmission is one of the biggest changes in the 1961 Jensen "S" series. This unit is standard equipment and offers four forward speeds either as a fully automatic system or as a conventional synchromesh gearbox. Disc brakes are on all four wheels, and safety belts are standard equipment in the front.

There is an 18-inch steering wheel, and behind this a cowed cluster of instruments, including speedometer (with trip odometer), tachometer, and gauges for temperature, oil pressure and fuel.

The luggage compartment provides space for luggage for four persons, still leaving room for such long items as golf bags or fishing gear. There is a lockable glove box and a companion box and armrest in the front compartment and two large pockets on the backs of the front seats.

Chassis is of tubular construction, and body is of resin-bonded fiberglass. Price of this car runs about \$5500.

**A RE-DESIGNED FRONT END** with four headlamps, first time on a British production model, is the most obvious change in the improved Series III Humber Super Snipe from the Rootes Group. The engine has several modifications to give longer life and increased load capacity on modern

highways. Lubrication is improved by a larger oil galley in the block and new drive gears to increase pump speed and output. The front three main bearings are now steel-backed lead indium shells; the rear set remain white metal.

A larger fan, with four blades instead of eight, gives better cooling with less noise. A new air cleaner and silencer with paper element are used for the carburetor.

Suspension is improved by use of higher-rated front coil springs of increased diameter and leaf springs with leaves three inches wide instead of 2½ inches at the rear. Spring leaves are reduced from six to five. These changes have



*For those who want a small station wagon, Fiat is producing the Bianchina, using parts and powerplant from the Fiat 500 Giardiniera. One big feature is wide rear door.*

permitted a return to a slimmer anti-roll bar. Detailed improvements to controls include a longer accelerator pedal with more progressive linkage, and a red warning light for the choke control. Interior trim has also been refined.

**ALTHOUGH THERE WERE** no motor show changes from Ford this year, the firm is now offering as a production option power-assisted front wheel disc brakes. Available for all versions of the Consul, Zephyr and Zodiac, the units will cost

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A Rolls-Royce automatic transmission is just one of the many changes in the new Jensen 'S' series. The new transmission is standard and offers four forward speeds either as a fully automatic system or conventional synchromesh box.

## AROUND THE WORLD IN 30 DAYS continued

approximately \$80. Ford dealers will soon be able to offer a disc-brake conversion kit for existing Mark II models.

The servo-assistance incorporated in the disc-brake system ensures light pedal pressure. Adjustment for wear is automatic, and the brake pads can be replaced in a matter of minutes. Already tested and proved in the most arduous international rallies, the new Ford brakes are equal to all emergencies under the most severe operating conditions, officials say.

**BIG NEWS FROM VAUXHALL** about the 1961 models is the automatic transmission added to the six-cylinder Cresta and Velox. It is a new form of the now-famous Hydramatic, developed by General Motors. This new unit shares the same basic design, but is lighter, simpler and more

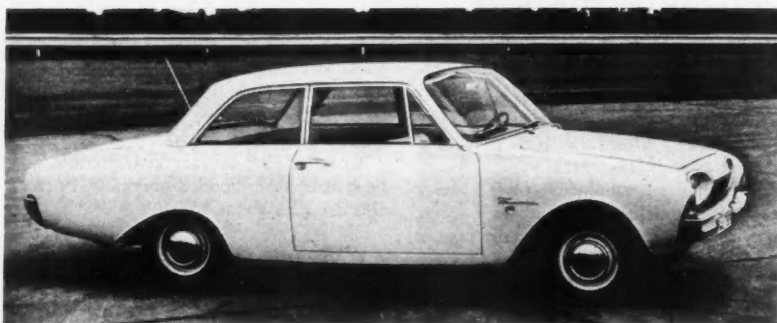
compact. It adds only 30 pounds to the weight of both the Cresta and Velox.

Vauxhall says the moderate weight and high efficiency of the new shift yields fuel consumption figures very close to those obtained with the manual transmission.

— Gordon Wilkins

**FORD MOTOR COMPANY'S** German plant — Ford Cologne — recently introduced its new car, the Taunus 17-M, which is one of the most modern-styled cars in Western Germany. Similar to the Falcon, the 17-M is available as a two-door sedan, four-door limousine and a station wagon. All are available with two optional engines — 1.7 liter or the 1.5 liter.

Chassis is much improved with independent front suspension with wishbones and coil springs and rigid rear axle with



West Germany's Ford Taunus 17-M features sleeker new styling with overtones of the Falcon shell and '61 Thunderbird grille. Even though there is obvious U.S. flavor in the design, Ford officials doubt that the car will be imported.



Another of the increasing number of European station wagons is this Humber Super Snipe Estate Car. Of doubtful distinction here are the first dual headlamps on a foreign car.

longitudinal semi-elliptic leaf springs. There are telescopic shock absorbers in front and rear, and the car is available with re-designed four-speed and three-speed gearboxes, both fully synchronized.

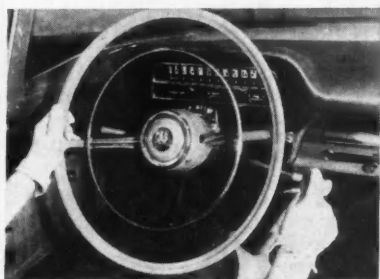
— Gunther Molter

## DRIVERREPORT — THE FERRARI

AT LE MANS, Ferrari swept the board with six cars in the first seven. Four of them were the 250 Gran Turismo model, privately owned. A few weeks later, Stirling Moss led the T.T. race at Goodwood almost from start to finish in the same model. These are only the latest of countless successes scored by the 250 GT in the toughest international events. It is clearly quite a car.

This model has been in production for some years now and has been steadily developed. It is much quieter and more comfortable than it used to be, and it was a big step forward when Dunlop disc brakes replaced the original drums.

There are several different body styles. Racing drivers use the short-chassis lightweight Berlinetta or the California roadster by Scaglietti on a 94.5-inch wheelbase. They are built primarily for competition use and soundproofing is subordinated to speed; the Berlinetta weighs a mere 2110



Interior shot displays the new Hydramatic shift now available on six-cylinder series of Vauxhall's Cresta and Velox. Unit is closely related to that in the new GM domestic compacts.



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*Here is Rolls-Royce's seldom-seen classic design for the Phantom V. The sliding roof extension over the front seats is operated by a single quick-release handle. Interior is in typical British style with veneer folding tables and cocktail cabinet.*

## AROUND THE WORLD IN 30 DAYS continued

pounds dry. The more angular coupe and convertible by Pinin Farina on a longer wheelbase (102.3 inches) are more solidly built, more comfortable and quieter. The last example I drove was one of the coupes.

This is speed in luxury for two; there is no question of carrying three abreast because the seats are separated by a big tunnel over the gearbox, surmounted by a short, rigid gear lever, an ashtray and several small switches. The instrument panel is soberly finished in non-reflecting black, with hoods over the big speedometer and tachometer and smaller dials ranged alongside. The steering wheel is rather small, with three polished duralumin spokes and a beautifully fashioned wooden rim.

The two seats, with adjustable backrests, are carefully shaped to give adequate lateral support on fast corners. The driving position is natural and easy and the pedals are correctly spaced to allow use of heel and toe on accelerator and brake. The hand falls straight from the wheel to the central gear lever which controls a magnificent gearbox, with Porsche synchromesh on all four forward speeds. Latest models also have a Laycock de Normanville overdrive operating on top only. Gearshifts can be made quick as thought, with a finger pressure on the lever, and the indirect gears make no noise. It is obviously planned by people who understand the requirements for fast driving.

But it is only when the starter wakes those 12 cylinders to life that one begins to appreciate the unique character of the Ferrari. The engine is unbelievably smooth. It is impossible to imagine that 12 pistons and connecting rods, 24 valves and rockers and three twin-choke carburetors are working madly under that long, low hood. It feels more like some sort of turbine, but unlike a turbine, it answers instantly to the controls. It responds to the accelerator like a tiger snarling at the trainer's whip, and the tach needle goes swinging around the dial.

Treating the Ferrari as a high-powered

sports car, a short, rasping burst of power takes it up to 50 mph in first; it will do 75 in second and over 100 in third. It reaches the hundred in well under 20 seconds (the short-chassis racing coupe gets there in 15 or less), so this is a speed that can be used on quite short stretches of clear road.

However, there is another side to the Ferrari's character. Bring it down to 12 mph in top gear, and then, as the traffic clears, tramp on the accelerator. It surges away as though drawn swiftly on some invisible cable without tremor or vibration. There is probably no other engine in the world which combines the ability to flash up to 7000 rpm in the gears with this supple super-smooth top gear performance. If one chooses to take advantage of this extraordinary flexibility, the car can travel fast without offending sensitive ears. If one drives hard, running up to high speeds in the gears, there is sufficient note from the exhaust to form the perfectly orchestrated accompaniment to fast driving, but not enough to make conversation difficult.

The car understeers slightly, so one takes fast corners in one sweep, without juggling with the wheel, but there is

always power available to help the tail around if necessary. In the last two years, steering has been made much sweeter by adoption of the ZF box with worm and roller. It is light, direct and transmits very little road shock. Even bad gullies in the middle of a bumpy corner produce no sharp snatch at the wheel. Brief arm movements deal with most corners and it is only on hairpin bends or when parking that the wheel must be passed from hand to hand. On competition models the steering is still higher geared and more direct. The old drum brakes required heavy pressure on the pedal, but the Dunlop discs have vacuum servo assistance and are fully able to cope with the Ferrari's maximum performance. The clutch is reasonably light and progressive despite the high torque it has to transmit.

Good road holding and perfect steering at high speeds are only to be expected from a factory that has built so many successful racing cars, but the comfort of the ride over poor surfaces is quite surprising and with the suspension set for fast touring, high speeds can be maintained over quite bumpy roads. Front suspension is by coil springs and wishbones with an anti-roll bar. The rear axle is carried on pairs of radius arms at each side. The springs are semi-elliptics but they function purely as springs; they do not have to perform the additional job of holding the axle steady against drive and braking torque.

— Gordon Wilkins

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By ALLEN F. EBBERS

**"IMPOSSIBLE!"** cried businessmen everywhere. "You cannot build such a car at so low a price!"

The year was 1945. Nobody had heard of the words, "compact car," and imported autos were rarely seen in this country. Besides, Detroit was thinking in terms of big and fast. But two machinists thought in terms of small and invested their life savings in a tiny car.

Today, thousands of their King Midget autos are globetrotting throughout the world, except perhaps in Iron Curtain countries. The small, two-passenger car chugs along at 50 miles per hour with a gas consumption of 60 to 65 miles per gallon. More amazing is the fact that the handsome little auto sells at a base price of only \$828, and even less in a non-dealer territory.

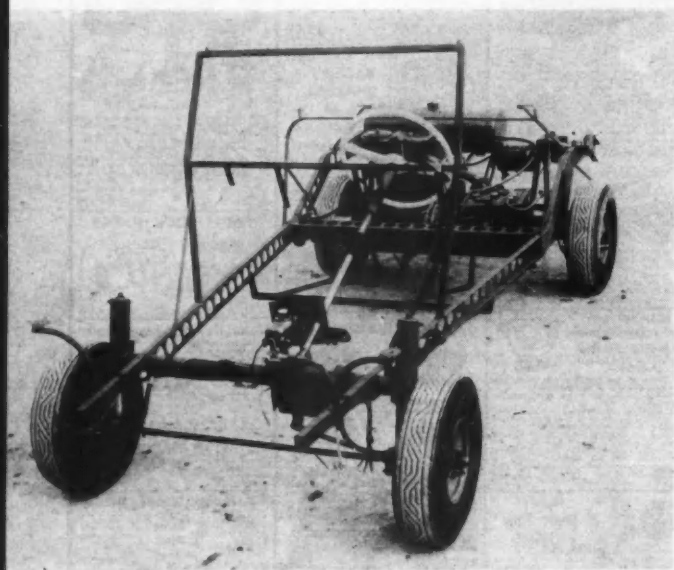
One of the first things to be noticed about the 9½-foot-long auto is that it is not a cheap imitation of a large automobile scaled down — it is a complete small car, newly designed from bumper to bumper. In fact, the tiny auto is so completely different that the manufacturers now have several dozen patents granted or pending on various features of the car.

the oil and lubricate the car in a few minutes without soiling your Sunday best.

One of the main reasons for the car's success is its airplane-like construction. The car is made of steel and aluminum, with frame members constructed of perforated aircraft tubing for strength and light weight. This new type of construction is so light that one man can lift the chassis, yet this same chassis has actually supported 20 men weighing a total of 3237 pounds! Actual weight of this dwarf is around 675 pounds — compare that to today's 4000-pound glory-wagons and you can easily see why this little car attains such phenomenal gas mileage.

The King Midget has a one-cylinder, Wisconsin air-cooled engine that packs real power, as many farmers and Alaskan owners have testified. The engine has been conservatively rated 9¼ horsepower at only 3400 rpm. Cooling of this heavy-duty powerplant is assured under all conditions by a built-in centrifugal blower. The chain-driven car has an automatic transmission with two forward speeds and a reverse gear.

Getting in and out of the King Midget is no harder than any other small car on the market. When seated, you'll find it's



*Part of the King Midget's simplicity and extremely light weight results from perforated aircraft frame members. The car weighs less than 700 pounds.*

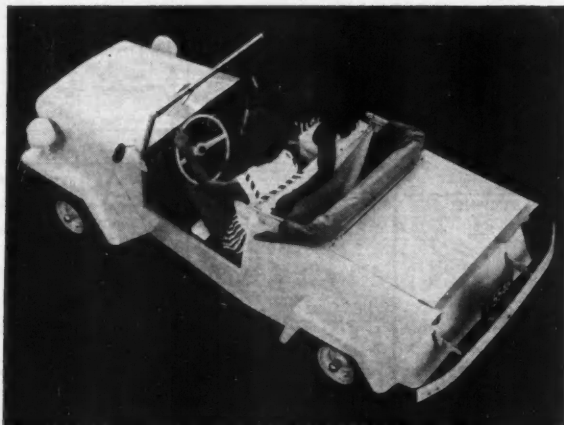
Primarily intended for use as a second car, many families are now using it as their only car. The reason for this is clear, as the maintenance cost of the pint-sized car is almost equal to that of a bicycle.

A father and son claimed to have traveled 8500 miles, pulling a boat and trailer, and that the tolls on bridges, highways, and tunnels cost them as much as the car's gas, oil, and greasing. Another owner reported driving the car from Athens, Ohio, to her Wisconsin home using only 11 gallons of gas on the 733-mile trip.

A few purchasers wrote the company saying that they even got up to 90 miles to the gallon on some trips!

Almost anyone can afford to operate a King Midget to his heart's desire. Mechanical parts and points of lubrication have been kept to the absolute minimum. These are accessible from above so that the owner may attend to these himself if he chooses, even if he is not mechanically inclined. You can drain

## THE CAR THAT COULDN'T BE BUILT



*Many of the King Midget's claims to fantastic economy are due to light weight. Other important factors are its 9¼-hp engine and chain-driven power train.*



## the King Midget is a little known American small car long produced at a price below \$1,000

plenty comfortable. And once inside, you'll be amazed at the minimum number of controls and the simplicity of its operation.

The brake and accelerator are the only foot controls. A handled parking brake is located on the left side near the driver, while the automatic shift lever can be found projecting forward beneath the front seat.

Eliminated from the dashboard are a lot of conventional car items such as a cigarette lighter, clock, radio, and water, gas and oil gauges. Instrumentation consists only of a speedometer, ammeter, starter button, lights switch, and a locking switch.

One of the surprising characteristics of the King Midget is its ability to give a fairly smooth ride. Although not quite up to par with that of a two-ton limousine, the midget's four-wheel independent springing system, created and patented by the originators, nevertheless offers unexpected comfort in so small a car. The springs operate in a continual bath of oil, enabling the car to climb a curb at a decent speed without transferring the full impact to the riders.

Steering the Lilliputian auto is effortless, as one finger can turn the 18-inch-high wheels even when the car is stationary. Another equally important feature of the car is its self-equalizing four-wheel hydraulic braking system which stops the light auto with less pedal pressure than power brakes on most large cars. Both the steering mechanism and the braking system are patented by the King Midget creators.

Highway performance for these dwarf cars would not, of course, infatuate a heavy-footed pedal-pusher. They can cruise easily at 50 miles per hour and if you pick your spots to pass, you'll be satisfied.

An Air Force staff sergeant drove a stock model King Midget coast-to-coast in four days, 11 hours and 21 minutes, actual driving time. Starting from the ocean in Atlantic City, New

Jersey, he traveled a total of 3095 miles to San Francisco, California, and spent only \$26.35 for all gasoline, oil, and greasing.

Another asset to driving the midget car is its maneuverability. A 360-degree turn is possible in a circle of only 13½ feet radius, since there is no engine to restrict the movement of the wheels. Then, too, parking space problems are practically eliminated as you can actually park two King Midgets in one parking meter space!

But where the King Midget really shines is on the short runs around the city with the many frequent starts and stops that sap the life of the big car. If you want proof, just try making an accurate in-town economy check of your big car. You're in for quite a shock!

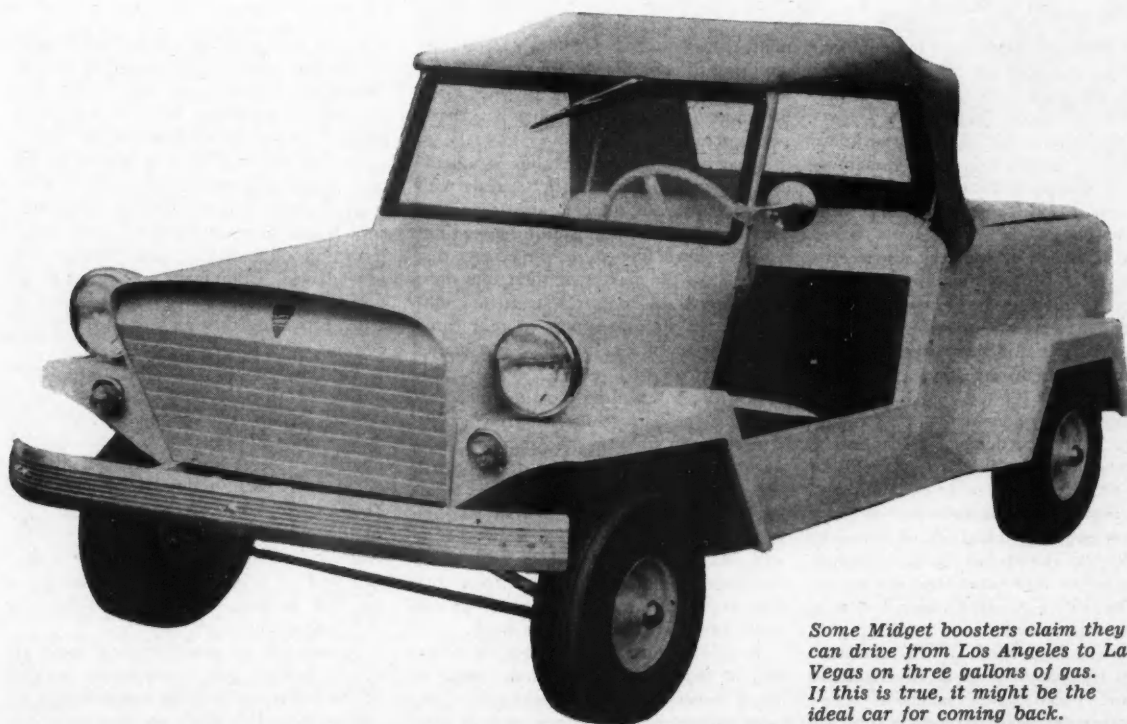
And if that's not enough, it will attract more attention and admiration than anything on the road. As one owner wrote, "I never knew until I started driving a King Midget, that cars contained people. Now every car has a driver with a friendly smile, a head sticking out, or a friendly arm waving."

The popular little auto has been used for work inside and between factories, carrying stars and directors between movie sets, transporting state park personnel and equipment around forest areas, and for delivering mail. Even car rental agencies have reported tremendous success with the low-cost maintenance cars. Five per cent of the King Midgets are exported for use in oil fields and other overseas businesses.

The durability of the low-priced autos has surprised many of their new owners. In fact, not one King Midget is known to have been scrapped! A Midwest purchaser confessed that he was skeptical when ordering, but after receiving the auto, he marveled at the well-engineered piece of machinery. It was truly amazing, he added.

It certainly is for the car that couldn't be built!

/MT



*Some Midget boosters claim they can drive from Los Angeles to Las Vegas on three gallons of gas. If this is true, it might be the ideal car for coming back.*

# BEWARE —THE OPTIMISTIC ODOMETER

inaccurate mileage counters are making  
a joke of most gasoline mileage checks

by James E. Potter

**A**FTER YEARS of apparent indifference, many drivers or car buyers currently have become acutely conscious of the gas mileage their vehicle delivers.

The reasons for this change in attitude are probably numerous — too numerous to list or speculate upon here. But the fact is clear. A lot of people are concerned over miles-per-gallon.

There is, however, one very disconcerting flaw in the entire situation, one that nearly all car drivers are largely unaware of. Except in very rare instances, it is virtually impossible for them to determine what kind of gas mileage they are getting in their cars.

Practically all odometers — that is the unit next to the speedometer that registers the number of miles traveled — are inaccurate. This defect is not so common nor so extreme in imported cars. But in years and years of testing hundreds of domestic cars, MOTOR TREND has found odometer error to be the rule rather than the exception. The degree of error varies, but it is nearly always present.

It has also been noted in MT road testing that the odometer error invariably is optimistic — that is, the odometer registers more miles than the vehicle has ac-

tually covered. Any driver, therefore, attempting to compute the mpg average for his car inevitably will come up with a figure more favorable than what is actually being achieved.

There are mechanical reasons for odometer inaccuracy, which will be dealt with subsequently. But there is no explanation for the consistent optimism of the readings — other than the pure conjecture that perhaps the car makers, if their cars must err, prefer it to be that way. It undoubtedly results in car owners more pleased with their machines. But there is a matter of ethics involved.

In order to examine the situation carefully, let's go back to the car driver.

A common sight on the American highway today is the economy-minded motorist, pad and pencil in hand, eyeing the twirling numbers of a service station gasoline pump meter. When the tank is full, he will make an accurate note of gallons and tenths pumped into his car, then with a lean toward the instrument panel he will make another notation in his book.

In a few hours or a few days, this scene will be repeated at a gas pump when he again notes gasoline consumption and odometer reading. After a minute of basic

math, he will arrive at a figure which may or may not please. Even though he accepts these figures as true, the fact is that they will give him nothing more than a *rough* estimate of the gas economy of his car!

In a car the odometer is located in the same housing as the speedometer, but the speedometer is magnetic driven, adjustable, and registers miles-per-hour. The mile-recording odometer is unadjustable and gear driven. Odometers are all alike in principle and usually last the lifetime of a car, providing they are installed without defect.

The automobile manufacturer determines the tire size and axle ratio for a certain model, then odometer drive and driven gears are selected with the desired number of teeth to fit. Accuracy of the odometer is possible only if the gear combinations are correct, tire inflation is constant, and all roads perfectly smooth. Knowing only this much about the odometer and its related factors is enough to say that accurate mileage recording is a near impossibility.

In practice, car manufacturers rarely attain a perfect gear combination because of the variety of gearing combinations resulting from axle ratio, tire size, and drive

and driven gears. A maximum margin of error of five per cent on the optimistic side is accepted as standard. Also accepted is "flexibility" in the calibration of the odometer. When odometers are ordered, car makers specify the tolerances they want in calibration which ordinarily are on the *plus* side. A new car odometer reading may vary between one and 10 miles over on a 100-mile trip, depending on the car.

There are other things that can influence odometer readings after the car is manufactured. Repairs in the drive train, substitution of axles, the installation of different sized tires, plus alterations in tire inflation and wear, and even the temperature variations of the tire. These factors are relatively minor, but they are nonetheless factors.

Perhaps it is for such reasons that the car makers, knowing perfect accuracy on odometers is unattainable, set odometers so that the driver obtains better mpg results. If there must be an error, let it be one that pleases rather than aggravates. Such justification, however, does not explain away the errors in odometers that often run as high as 10 per cent, and in extreme cases even more. Nor does it explain why odometers on imported cars, although not perfectly accurate, show only slight errors, such as one or two per cent.

The built-in error in odometer calibrations, that is, those variations apart from drive train factors and so forth, are indicated by service instructions distributed to speedometer repair shops. These instructions clearly state calibration "tolerances" for various odometers.

It is obvious that so many factors can influence odometer accuracy that no universal formula for correction can be given. The speedometer or odometer corrections reported in MT road tests may be a guide, but only for that particular car equipped with specific transmission-axle ratio combination and specified tires.

Any car owner or driver, sufficiently interested, can correct his car's odometer with no particular trouble in most sections of the U.S. On most major highways are odometer check signs which provide measured distances, usually of five or 10 miles, by which reasonably accurate odometer corrections can be made.

Any driver not aware of the location of such odometer checks can usually inquire about them through his local automobile club. A few auto clubs also offer an odometer and speedometer correction service. At such places the car is driven onto a form of chassis dynamometer where the two instruments are checked and the degree of error noted.

Yet it is obvious that a good deal of talk about gas mileage and fuel economy of domestic cars has to be somewhat modified. At least until the car makers take the necessary steps to insure greater odometer accuracy.

/MT

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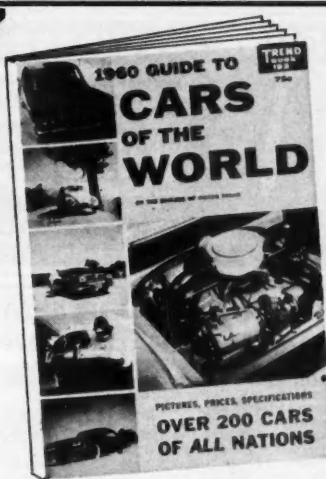
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'27 DODGE cpe. Run every day. Extra parts incl. \$1250. Walter Schaefer, 2301 Caseyville Ave., Belleville, Ill. Phone AD 4-3162.

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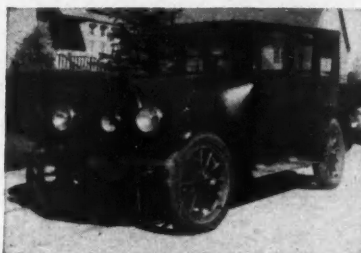


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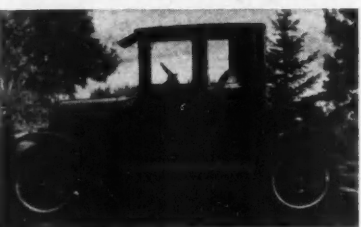


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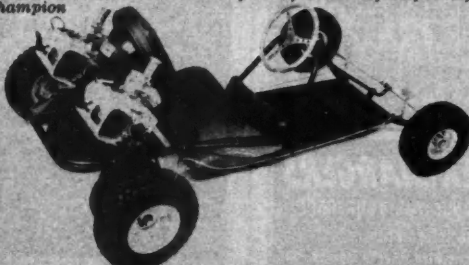
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# NEW PRODUCTS

**AN EASILY INSTALLED** brake control valve eliminates slippage or creeping of parked cars, helps prevent dangerous accidents and insures against tow-away robbery. The "Park-Safe" brake control is installed under the hood, and it does not affect the feel of brakes or interfere in



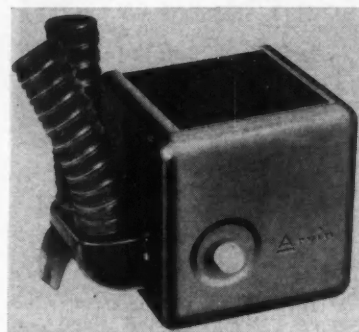
any way with normal braking. Brakes are automatically locked when foot brake is applied and engine is off. They are automatically released when the engine is started. In case of emergency, however, brakes can be easily released from under the hood for towing. Retail price is \$24.95. For further information write: A-Co Manufacturing Co., Inc., Claverack, N. Y.

**A FULLY ADJUSTABLE** foam cushion headrest that fits all makes and models of cars has been introduced by Mark Manufacturing Co. Called "Nab-a-Nap," its chrome frame fits firmly to any seat and is adjustable to any height or angle. The zippered corduroy cover removes easily for laundering and is available in six



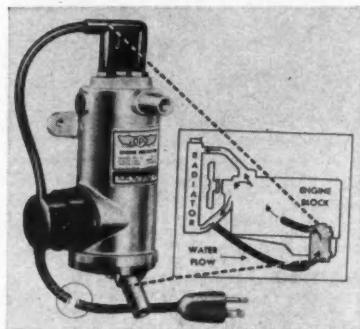
colors. Price is \$8.95 each or \$16.95 per pair. Write Mark Manufacturing Co., 4230 Commercial S.E., Salem, Ore.

**A NEW HOT WATER HEATER** has been designed especially to conserve legroom in small and compact passenger cars. Available in both six- and 12-volt models complete with fittings, the heater is only seven inches square, yet has a 12,000 BTU heat capacity. It has a 6 by 5/8 by 2-inch copper radiator that allows air to pass through the heater with minimum restriction. Defroster outlets are positioned on the left side of the heater case so the unit can be mounted flush against the right side of the car or in the middle. The heater is priced at \$39.95. For fur-



ther information write: Automotive Division, Arvin Industries, Inc., Columbus, Ind.

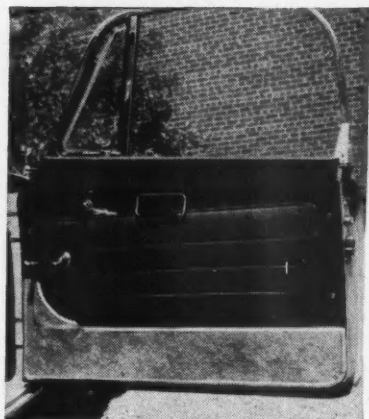
**CARS OR TRUCKS** which are stored outside during winter can be started easily on cold mornings by using a new device, the "TPI Engine Heater." The unit is housed in an aluminum alloy casting



containing a copper sheathed electrical heating element. It is mounted under the hood and plugged into any 110- or 220-volt electrical outlet. The automatic thermostat starts to operate at 40° and circulates the heated coolant through the engine block. For further information write: Tech Products, Inc., 6th & Trumbull Sts., Elizabeth, N. J.

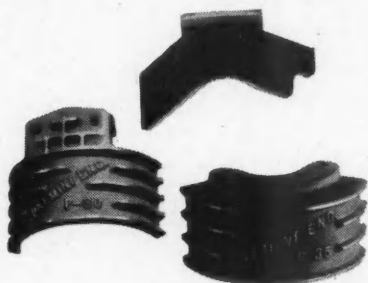


**THE FASTIDIOUS CAR OWNER** can now protect his door upholstery by installing a kick plate. The plate, constructed of embossed heavy-gauge leather-grain aluminum, will prevent unsightly marring or tearing of



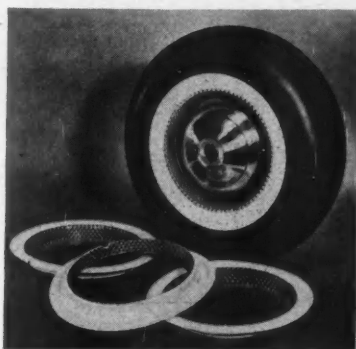
interior trim. The plate is larger in area than others on the market, and matches the interior. Further information can be obtained by writing Bakers World-Wide Auto Parts, Inc., Box 57, Franklin Square, L.I., N.Y.

**PREVENT THE POSSIBLE LOSS** of, or serious injury to, your fingers when reaching back



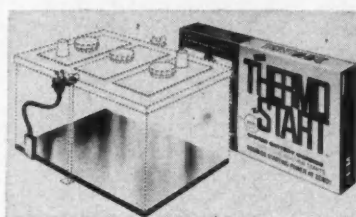
to adjust a kart carburetor. Play it safe and install a Palmini chain guard — required at most tracks and by most associations. They are available for different mounting positions, left- and right-hand installations. Complete prices, instructions and illustrations are given in the new catalog, available for 50c from Palmini Engineering Corp., 3156 N. San Gabriel Blvd., South San Gabriel, Calif.

**A NEW IDEA** for protecting tires and improving their appearance has been developed by Aske-Wood, Inc., of Detroit, Mich. This new accessory, called "Spats," is designed to be used with standard black-wall tires and to give the appearance of white sidewalls. It is made from pure white natural rubber and nickel stainless steel rings. "Spats" are available for all makes and models of automobiles, trucks and mobile homes



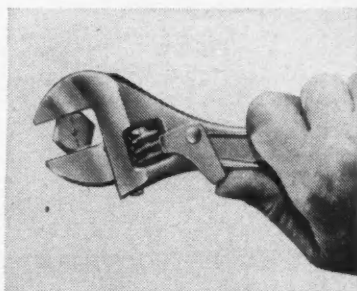
equipped with 13-, 14-, or 15-inch wheels. For more information write: Aske-Wood, Inc., 1617 Fisher Bldg., Detroit 2, Mich.

**BATTERIES WILL WORK** more efficiently in cold weather with this new electrically heated battery warmer. "Thermo-Start" will hold a car battery at 60° F in sub-zero weather. The unit's heating coil consists of nichrome wire wound around



an insulating core and molded into a protective neoprene pad. It is easily installed under the battery and will operate on either AC or DC house current. Price is \$9.95. Write: Stadri Products Co., 147-47 Sixth Ave., Whitestone 57, L.I., N.Y.

**A NEW LOCKING DEVICE** is available for the adjustable wrench. A flick of the thumb locks the jaws at any desired setting and this simple, fool-proof device is guaranteed against slipping or resetting. Sizes



range from 4 through 12 inches. Information can be obtained from Utica Drop Forge and Tool Division, Kelsey-Hayes Co., Utica 4, N.Y.



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STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 STAT. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF MOTOR TREND, published monthly at Los Angeles, Calif. for Oct. 1, 1960.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher: Robert E. Petersen, 5959 Hollywood Blvd., Los Angeles, Calif.

Editor: Don Werner, 5959 Hollywood Blvd., Los Angeles, Calif.

Managing Editor: James Miller, 5959 Hollywood Blvd., Los Angeles, Calif.

Business Manager: none

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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5. The average number of copies of each issue of this publication, sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.)

362,922.

ROBERT E. PETERSEN  
Publisher

Sworn to and subscribed before me this 1st day of October, 1960.

(SEAL) J. A. THOMPSON  
(My commission expires May 24, 1962.)

## TRENDS IN BOOKS

FLOYD CLYMER has published his fourth book about the Volkswagen. Aimed at the new VW owner, it supplements his earlier manuals on servicing, souping and repairing the popular German make.

*How to Drive a Volkswagen* is a typical Clymer "scrapbook" (or "non-book" as TIME magazine would have it), a pastiche of articles and pictures for casual browsing rather than intense, cover-to-cover reading. It provides an excellent briefing on the car, including details of delivery in Europe.

Unfortunately, it isn't quite as complete a volume as it might have been. It went to press a few weeks too soon to include mention of several important changes in the '61 VW.

Much of the material is reprinted from VW sales and service literature, German tourist pamphlets and even the other Clymer books. However, the heart of the text, Clymer's essay on VW driving technique, is all new and useful to anyone unfamiliar with the make.

The analysis of handling characteristics with the engine in the rear is especially good. Clymer suggests that the VW doesn't oversteer as much as it merely seems to in comparison with nose-heavy, understeering American cars. The principal weakness of his discussion is that it ignores the higher-powered but

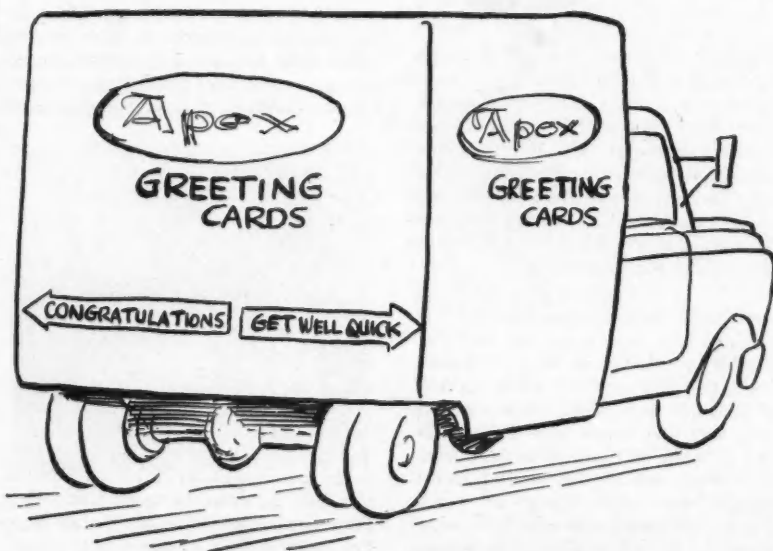
quieter-running engine, synchromesh first gear and steadier handling of the latest VW. These and other modifications for '61 invalidate many remarks he applies to the make as a whole.

The section on buying the car abroad is by Samuel Weill, who is an executive with one of America's largest VW distributors and should know what he's talking about. He lists full details on prices in major European cities, together with information on driver's license, registration, insurance, shipping the car to the U.S. and other such complications.

For those fortunate enough to take advantage of Weill's advice, a section on motoring in Germany is included. A few pages are also devoted to useful German phrases though, with no guide to their pronunciation, it's difficult to see how anyone unfamiliar with the language could hope to use them—much less understand the responses from the natives.

Overall, the book is of interest to anyone buying a new or used VW for the first time. But we hope Clymer's original print order was small enough that he can soon bring out a revised edition, updated to include the '61 changes. /MT

Priced at \$3, the volume can be ordered from Floyd Clymer, 1268 S. Alvarado St., Los Angeles 6, Calif.



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Note: if you prefer you can have Michelin X instead of whitewall tires or cloth instead of leatherette upholstery.



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